

THE UNIVERSITY
OF ILLINOIS
LIBRARY

C
K13uH
1915/16

UNIVERSITY OF ILLINOIS LIBRARY
MAY 31 1918

H

**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION 1
GENERAL INFORMATION**



Digitized by the Internet Archive
in 2013

2
K13uH
1915/16

STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.

- MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Topeka.

393107

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 8 p. m.—Organ recital.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.
July 19, Wednesday—Close of first term.
July 20, Thursday—Opening of second term.
August 16, Wednesday—Close of second term.

Academic Year, 1916-'17.

September 11, 12, 13, Monday, Tuesday, Wednesday—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

CHRONOLOGICAL TABLE.

- 1855—(December). A university provided for in the first constitution of Kansas territory, at Topeka.
- 1857—(June). State University at Lawrence provided for by free-state legislature, Topeka.
- (September). Seminary of learning provided for in Lecompton constitution.
- 1858—(April). System of public instruction, including a university department, provided for in Leavenworth constitution.
- 1859—(July). State University provided for as at present, in Wyandotte constitution, now the constitution of the state of Kansas.
- 1861—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
- 1863—Lawrence selected as location for the University of Kansas.
- 1864—The University organized by the legislature.
- 1865—March 21, first meeting of the Board of Regents.
- 1866—July 19, Regents elected the first Faculty of the University, consisting of Elial Jay Rice, A. M., David Hamilton Robinson, A. M., and Francis Huntington Snow, A. M.
- North College erected.
- September 12, first session of the University opened at North College.
- 1870—Department of Engineering organized.
- 1872—Fraser Hall erected and occupied.
- 1876—Normal Department established.
- 1877—Department of Music organized.
- 1878—Department of Law organized.
- 1883—Medical Hall (old Chemistry Building) erected.
- 1885—Department of Pharmacy established.
- Normal Department discontinued.
- 1886—Snow Hall erected.
- 1891—The University reorganized; the Preparatory Department discontinued and the Schools of Arts, Engineering, Law, Fine Arts, and Pharmacy established.
- 1894—Spooner Library erected.
- Chancellor's residence erected.
- 1895—Blake Hall erected.
- 1896—The Graduate School established.
- 1899—The Fowler Shops erected.
- The School of Medicine established.
- 1900—Chemistry and Pharmacy Building erected.
- 1902—Dyche Museum of Natural History erected.
- 1903—Summer Session established.
- 1904—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
- Green Hall erected.
- 1905—Full four-year course in medicine established.
- Eleanor Taylor Bell Memorial Hospital erected.
- 1906—Robinson Auditorium-Gymnasium erected.
- Clinical Laboratory erected.
- Nurses' Training School established.
- 1907—Marvin Hall erected.
- 1908—Haworth Hall erected.
- 1908—Power plant and laboratories erected.
- 1909—The School of Education established.
- The Division of University Extension established.
- 1911—First wing of Administration Building erected.
- State Hospital erected at Rosedale.
- Clay-working laboratory erected.
- 1915—Dispensary at Rosedale erected.
- Oread Training School Building erected.
- 1916—Vivarium erected.

OFFICERS OF ADMINISTRATION.

THE UNIVERSITY.

FRANK STRONG, Ph. D., Chancellor.

Room 103, Fraser Hall.

Hours: 10 a. m. to 12 m. and 2 to 4 p. m.

GEORGE O. FOSTER, A. B., Registrar.

Room 109, Fraser Hall.

Hours: 8 a. m. to 12 m. and 2 to 5 p. m.

JOHN M. SHEA, Superintendent of Buildings and Grounds.

Room 201, Repair Shop.

MRS. EUSTACE H. BROWN, Adviser of Women.

Room 114, Fraser Hall.

Hours: 9:30 to 11:30 a. m. and 2:30 to 4:30 p. m.

EDWARD M. BRIGGS, A. M., University Marshal.

Property Room, Robinson Gymnasium.

Hours: 10:30 to 12 m.

THE SCHOOLS.

FRANK W. BLACKMAR, Ph. D., Dean of the Graduate School.

Room 206, Administration Building.

Hours: 8 to 11 a. m.

OLIN TEMPLIN, A. M., Dean of the College of Liberal Arts and Sciences.

Room 102, Fraser Hall.

Hours: 9 to 12 a. m. and 2 to 5 p. m.

PERLEY F. WALKER, M. M. E., Dean of the School of Engineering.

Room 112, Marvin Hall.

Hours: 9 a. m. to 12 m.

JAMES W. GREEN, A. M., Dean of the School of Law.

Room 101, Green Hall.

Hours: 9 to 10 a. m.

HAROLD L. BUTLER, A. B., Dean of the School of Fine Arts.

North College.

Hours: 9 a. m. to 12 m. and 2 to 5 p. m.

CARL A. PREYER, Mus. D., Associate Dean of the School of Fine Arts.

North College.

Hours: _____

LUCIUS E. SAYRE, Ph. M., Dean of the School of Pharmacy.

Room 215, Chemistry and Pharmacy Building.

Hours: 10 to 11 a. m.

SAMUEL J. CRUMBINE, M. D., Dean of the School of Medicine.

Tuesdays at Lawrence.

Wednesdays at Rosedale.

MERVIN T. SUDLER, Ph. D., Associate Dean of the School of Medicine.

Tuesdays and Saturdays at Lawrence.

Mondays, Wednesdays, Thursdays and Fridays at Rosedale.

FREDERICK J. KELLY, Ph. D., Dean of the School of Education.

Room 119, Fraser Hall.

Hours: 11 a. m. to 12 m. and 3 to 4 p. m.

THE DIVISIONS.

FREDERICK J. KELLY, Ph. D., Director of Summer Session.

Room 119, Fraser Hall.

Hours: 11 a. m. to 12 m. and 3 to 4 p. m.

FREDERICK R. HAMILTON, Ph. B., Director of University Extension.

Room 117, Fraser Hall.

Hours: 8 a. m. to 12 m. and 2 to 5 p. m.

WILLIAM O. HAMILTON, A. B., Director of Athletics.

Room 203, Robinson Gymnasium.

Hours: 10 a. m. to 12 m.

———, Director of Libraries.

Room ———, Spooner Library.

Hours: ———

FRANK STRONG, Ph. D., *ex officio* Director of Museums.

Room 103, Fraser Hall.

Hours: 10 a. m. to 12 m. and 2 to 4 p. m.

FRANK H. HODDER, Ph. M., Director of Publications.

Room ———

Hours: ———

———, Director of State Service Work.

Room ———

Hours: ———

———, Director of University Surveys.

Room ———

Hours: ———

OFFICERS OF INSTRUCTION.

FRANK STRONG, Chancellor of the University and President of the Faculties.

A. B. Yale, 1884; A. M. Yale, 1893; Ph. D. Yale, 1897; LL. D. Oregon, Baker, Kansas Agricultural College, 1909. Lecturer in History, Yale, 1897-99; President University of Oregon, 1899-1902. Present position, 1902—.

PROFESSORS.

EPHRAIM MILLER, Emeritus Professor of Mathematics and Astronomy.

A. B. Allegheny, 1855; A. M. Allegheny, 1858; Ph. D. Allegheny, 1895. Professor of Mathematics and Astronomy, Kansas, 1874-1910.

JAMES WOODS GREEN, Dean of the School of Law and Professor of Law.

A. B. Williams, 1866; A. M. Williams, 1886. Present position, 1878—.

EDGAR HENRY SUMMERFIELD BAILEY, Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories.

Ph. B. Yale, 1873; Ph. D. Illinois Wesleyan, 1883. Instructor in Chemistry, Yale, 1873-74; Instructor in Chemistry, Lehigh, 1874-83. Present position, 1883—.

ALEXANDER MARTIN WILCOX,¹ Professor of Greek Language and Literature.

A. B. Yale, 1877; Ph. D. Yale, 1880. Assistant in Greek, Wesleyan, 1880-83. Present position, 1885—.

LUCIUS ELMER SAYRE, Dean of the School of Pharmacy, Professor of Pharmacy and Materia Medica.

Ph. G. Philadelphia College of Pharmacy, 1866; Ph. M. Philadelphia College of Pharmacy, 1896; B. S. Michigan, 1897. Instructor, Philadelphia College of Pharmacy, 1880-85. Present position, 1885—.

FRANK WILSON BLACKMAR, Dean of the Graduate School and Professor of Sociology.

Ph. B. University of the Pacific, 1881; A. M. University of the Pacific, 1884; Ph. D. Johns Hopkins, 1889. Professor of Mathematics, University of the Pacific, 1882; Professor of History and Sociology, Kansas, 1889-99; Dean of the Graduate School, 1897—; Professor of Sociology and Economics, Kansas, 1899-1911; Professor of Sociology, Kansas, 1911—.

CHARLES GRAHAM DUNLAP, Professor of English Literature.

A. B. Ohio Wesleyan, 1883; A. M. Ohio Wesleyan, 1899; Litt. D. Princeton, 1892. Assistant Professor of English Literature, Kansas, 1887; Associate Professor of English Literature, Kansas, 1889. Present position, 1890—.

CARL ADOLPH PREYER, Associate Dean of the School of Fine Arts and Professor of Piano and Composition.

Mus. D. Baker, 1909; Professor of Piano, Counterpoint, Canon and Fugue, Kansas, 1892-1915. Present position, 1915—.

OLIN TEMPLIN, Dean of the College of Liberal Arts and Sciences, and Professor of Philosophy.

A. B. Kansas, 1886; A. M. Kansas, 1890. Instructor in Mathematics, Kansas, 1884; Assistant Professor of Mathematics, Kansas, 1886; Associate Professor of Philosophy, Kansas, 1890; Professor of Philosophy, Kansas, 1892—. Present position, 1903—.

1. On leave of absence.

EDWIN MORTIMER HOPKINS, Professor of Rhetoric and English Language.

A. B. Princeton, 1888; A. M. Princeton, 1890; Ph. D. Princeton, 1894. Assistant Professor of English, Kansas, 1889; Associate Professor of English, Kansas, 1892. Present position, 1893—.

FRANK HEYWOOD HODDER, Professor of American History and Political Science, and Director of University Publications.

Ph. M. Michigan, 1883. Instructor in History and Economics, Cornell, 1885-89; Assistant Professor of Economics, 1889-90; Associate Professor of American History, 1891-93. Present position, 1893—.

ERASMUS HAWORTH, Professor of Geology and Mineralogy.

B. S. Kansas, 1881; M. S. Kansas, 1884; Ph. D. Johns Hopkins, 1888. Associate Professor of Geology, Kansas, 1892. Present position, 1894—.

ARTHUR TAPPAN WALKER,² Professor of Latin Language and Literature.

A. B. New York, 1887; A. M. Vanderbilt, 1892; Ph. D. Chicago, 1898. Professor of Latin and Greek, Juniata, 1888-90; Professor of Latin and Greek, Emory and Henry, 1892-93; Instructor in Latin, Chicago, 1894-97. Present position, 1897—.

WILLIAM CHASE STEVENS, Professor of Botany.

B. S. Kansas, 1885; M. S. Kansas, 1893. Assistant in Botany, 1889-92; Associate Professor of Botany, 1892-99. Present position, 1899—.

ARVIN SOLOMON OLIN, Professor of Education.

A. B. Ottawa, 1892; A. M. Kansas, 1894; LL. D. Ottawa, 1915. Instructor in Pedagogy, Kansas, 1893; Associate Professor of Pedagogy, Kansas, 1894; Professor of Education, Kansas, 1899; Dean of the Summer Session, Kansas, 1913-15; Acting Dean of the School of Education, Kansas, 1913-14; Dean of the School of Education, Kansas, 1914-15. Present position, 1899—.

WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.

Académie Julien. Professor of Drawing and Painting, Washburn, 1893-94; Instructor in Drawing, Washington, 1895-97. Present position, 1899—.

EUGENIE GALLOO, Professor of Romance Languages and Literatures.

Académie de Paris, Brevet, 1881, Sorbonne, 1884; B. L. Michigan, 1892; A. M. Kansas, 1895. Assistant Professor in French, 1892; Associate Professor in French and Spanish, 1899-1900. Present position, 1900—.

WILLIAM LIVESEY BURDICK, Professor of Law.

A. B. Wesleyan, 1882; A. M. Wesleyan, 1885; Ph. D. Grant, 1884; LL. B. Yale, 1898. Present position, 1898—.

CHARLES SANFORD SKILTON, Professor of Organ, Theory of Music and Music History.

A. B. Yale, 1889; Dean of the School of Fine Arts, 1903-15. Present position, 1903—.

IDA HENRIETTA HYDE, Professor of Physiology.

A. B. Cornell, 1891; Ph. D. Heidelberg, 1896. Associate Professor of Physiology, Kansas, 1899. Present position, 1905—.

WILLIAM HAMILTON JOHNSON, Professor of Education.

A. B. Kansas, 1885; A. M. Kansas, 1891. Professor of History and Pedagogy, Emporia State Normal, 1893-96. Present position, 1903—.

JAMES NAISMITH, Professor of Physical Education.

A. B. McGill, 1887; M. D. Gross Medical, 1898; M. P. E. Springfield Y. M. C. A. College, 1910. Instructor, Springfield Y. M. C. A. College, 1891; Associate Professor of Physical Education, Kansas, 1898. Present position, 1908—.

SAMUEL JOHN HUNTER, Professor of Entomology.

A. B. Kansas, 1893; A. M. Kansas, 1893. Assistant Professor of Entomology, Kansas, 1896; Associate Professor of Entomology, Kansas, 1899. Present position, 1906—.

2. Absent on leave, first semester.

WILLIAM EDWARD HIGGINS, Professor of Law.

B. S. Kansas, 1888; LL. B. Kansas, 1894. Assistant Professor of Law, 1894; Associate Professor of Law, 1900. Present position, 1906—.

PERLEY F. WALKER, Dean of the School of Engineering and Professor of Mechanical Engineering.

B. M. E. Maine, 1896; M. E. Maine, 1900; M. M. E. Cornell, 1901. Instructor in Mechanical Engineering, Maine, 1896-1900; Professor of Mechanical Engineering, Maine, 1902-05; Professor of Mechanical Engineering, Kansas, 1905-13. Present position, 1913—.

MERVIN TUBMAN SUDLER, Associate Dean of the School of Medicine, and Professor of Surgery.

B. S. Maryland Agricultural, 1894; M. S. 1897; Ph. D. Johns Hopkins, 1899; M. D. College of Physicians and Surgeons, Baltimore 1901. Instructor in Anatomy, Johns Hopkins, 1900-02; Instructor in Anatomy and Surgery, Cornell, 1902-03; Dean of the Scientific Department, School of Medicine, Kansas, 1905-11. Present position, 1911—.

CARL LOTUS BECKER, Professor of European History.

B. L. Wisconsin, 1896; Ph. D. Wisconsin, 1907. Assistant Professor of European History, Kansas, 1902-07; Associate Professor of European History, Kansas, 1907-08. Present position, 1908—.

L. D. HAVENHILL, Professor of Pharmacy.

Ph. C. Michigan, 1893; Ph. M. Michigan, 1894; B. S. Kansas, 1903. Assistant Professor of Pharmacy, 1899-1906; Associate Professor of Pharmacy, 1906-08. Present position, 1908—.

FREDERICK EDWARD KESTER, Professor of Physics.

M. E. Ohio, 1895; A. M. Cornell, 1899; Ph. D. Cornell, 1905. Assistant in Physics, Ohio, 1895-98; Instructor in Physics, Ohio, 1899-1901; Assistant Professor of Physics, Ohio, 1901-03, 1905-07; Associate Professor of Physics, Ohio, 1907-09. Present position, 1909—.

GEORGE CARL SHAAD, Professor of Electrical Engineering.

B. S. Pennsylvania, 1900; E. E. Pennsylvania, 1905. Instructor in Electrical Engineering, Wisconsin, 1902-04; Assistant Professor of Electrical Engineering, Wisconsin, 1904-06; Assistant Professor of Electrical Engineering, Massachusetts Institute of Technology, 1906-07; Associate Professor of Electrical Engineering, Massachusetts Institute of Technology, 1907-09. Present position, 1909—.

SAMUEL JAY CRUMBINE, Dean of the School of Medicine.

M. D. Cincinnati, 1889. Present position, 1905—.

HAMILTON PERKINS CADY, Professor of Chemistry.

A. B. Kansas, 1897; Ph. D. Kansas, 1903. Assistant Professor of Chemistry, 1899-95; Associate Professor of Chemistry, 1895-1911. Present position, 1911—.

DON CARLOS GUFFEY, Professor of Obstetrics and Gynecology.

B. S. Missouri, 1899; M. S. Kansas, 1908; M. D. Pennsylvania, 1905. Present position, 1914—.

B. J. DALTON,³ Professor of Railway Engineering.

B. C. E. Kansas, 1890. Associate Professor of Railway Engineering, 1906. Present position, 1911—.

MERLE THORPE, Professor of Journalism, and Director of University Press and Publicity.

A. B. Washington, 1908. Instructor in Journalism, Washington, 1907-09. Assistant Professor of Journalism, Washington, 1909-11. Present position, 1911—.

HARRY ALVIN MILLIS, Professor of Economics.

A. B. Indiana, 1895; A. M. Indiana, 1896; Ph. D. Chicago, 1899. Professor of Economics and Sociology, Arkansas, 1902-03; Assistant Professor of Economics, Leland Stanford, 1903-10; Associate Professor of Economics, Leland Stanford, 1910-12. Present position, 1912—.

3. On leave of absence.

JOHN SUNDWALL, Professor of Anatomy.

B. S. Chicago, 1903; Ph. D. Chicago, 1906; M. D. Johns Hopkins, 1912. Assistant in Anatomy, Chicago, 1906-07; Professor of Anatomy, Utah, 1907-10. Present position, 1912—.

LINDSEY STEPHEN MILNE, Professor of Medicine.

M. B., Ch. B., M. D. Edinburgh, 1908. Present position, 1912—.

FREDERICK HORATIO BILLINGS, Professor of Bacteriology.

A. B. Leland Stanford, 1896; A. M. Harvard, 1897; Ph. D. Munich, 1901. Professor of Botany and Bacteriology, Louisiana, 1901-07; Associate Professor of Botany and Bacteriology, Kansas, 1907-13. Present position, 1913—.

HERBERT ALLAN RICE, Professor of Mechanics and Structural Engineering.

C. E. Ohio, 1897. Instructor in Civil Engineering, Lehigh, 1902-05; Assistant Professor of Civil Engineering, Kansas, 1905-06; Associate Professor of Civil Engineering, 1906-13. Present position, 1913—.

BENNETT MILLS ALLEN, Professor of Zoölogy.

Ph. B. De Pauw, 1898; Ph. D. Chicago, 1903. Instructor in Zoölogy, Wisconsin, 1903-08; Assistant Professor of Zoölogy, Wisconsin, 1908-13. Present position, 1913—.

EDMUND HOWARD HOLLANDS, Professor of Philosophy.

Ph. B. Cornell, 1899; A. M. Cornell, 1901; Ph. D. Cornell, 1905. Instructor in Philosophy, Cornell, 1905-06; Instructor in Philosophy, Princeton, 1906-07; Instructor in Philosophy, Cornell, 1907-09; Assistant Professor of Philosophy, Hamilton, 1909-10; Professor of Philosophy, Butler, 1910-13. Present position, 1913—.

HENRY WILBUR HUMBLE, Professor of Law.

A. M. Cornell, 1908; LL. B. Cincinnati, 1904; J. D. Chicago, 1915. Assistant in Economics, Cornell, 1907-08; Associate Professor of Law, Kansas, 1908-13. Present position, 1913—.

EDWARD DELAHAY OSBORN, Professor of Law.

Present position, 1913—.

SAMUEL ALEXANDER MATTHEWS, Professor of Physiology and Experimental Pharmacology.

M. D. Michigan, 1898. Assistant Professor of Experimental Therapeutics, Chicago, 1905-13. Present position, 1913—.

GOLDWIN GOLDSMITH, Professor of Architecture.

Ph. B. Columbia, 1896. Present position, 1913—.

WILLIAM ARCH MCKEEVER, Head of Department of Child Welfare.

A. M. Kansas, 1898; Ph. M. Chicago, 1904. Professor of Philosophy, Kansas State Agricultural College, 1900-13. Present position, 1913—.

FRANK BURNETT DAINS, Professor of Chemistry.

Ph. B. Connecticut Wesleyan, 1890; M. S. Wesleyan, 1891; Ph. D., Chicago, 1898. Assistant Professor of Chemistry, Northwestern, 1895-1901; Professor of Chemistry, Washburn, 1902-11; Associate Professor of Chemistry, Kansas, 1911-14. Present position, 1914—.

CLEMENT CLARENCE WILLIAMS, Professor of Railway Engineering.

B. S. Southern Iowa Normal, 1900; B. S. in C. E. Illinois, 1907; C. E. Colorado, 1909. Instructor, Southern Iowa Normal, 1900-02; Instructor in Civil Engineering, Colorado, 1907-09; Assistant Professor of Civil Engineering, Colorado, 1909-14. Present position, 1914—.

ELMER FRANKLIN ENGEL, Professor of German.

A. B. Kansas, 1892; A. M. Harvard, 1898. Assistant in German, Kansas, 1892; Assistant Professor of German, Kansas, 1896-1905; Associate Professor of German, Kansas, 1905. Present position, 1914—.

JOHN NICHOLAS VAN DER VRIES, Professor of Mathematics.

A. B. Hope, 1896; A. M. Hope, 1899; Ph. D. Clark, 1901. Assistant Professor of Mathematics, Kansas, 1901-06; Associate Professor of Mathematics, Kansas, 1906-14. Present position, 1914—.

WILLIAM OLIVER HAMILTON, Professor of Physical Education and General Manager of Athletics.

A. B. William Jewell, 1898. Physical Director, William Jewell, 1896; Assistant Professor of Physical Education, Kansas, 1912. Present position, 1914—.

ARTHUR MACMURRAY, Professor of Public Speaking.

A. B. Kansas, 1896; M. O. Ott Schools of Expression, 1904. Professor of Public Speaking, Iowa State College, 1908-14. Present position, 1914—.

FREDERICK RUTHERFORD HAMILTON, Director University Extension Division.

Ph. D. Wiseonsin, 1906. Present position, 1914—.

ELIZABETH CADE SPRAGUE, Professor of Home Economics.

Graduate, Boston Normal School of Household Arts, 1898. Instructor in Home Economics, Lake Erie, 1900-01; Research Assistant, Illinois, 1901-05; Instructor in Home Economics, Chicago, 1905-13. Present position, 1914—.

ROBERT MORRIS OGDEN, Professor of Psychology.

B. S. Cornell, 1901; Ph. D. Würzburg, 1903. Assistant in Psychology, Missouri, 1903-05; Assistant Professor of Philosophy and Psychology, Tennessee, 1905-07; Associate Professor of Philosophy and Psychology, Tennessee, 1907-09; Professor of Philosophy and Psychology, Tennessee, 1909-14. Present position, 1914—.

RALPH H. MAJOR, Professor of Pathology.

A. B. William Jewell, 1902; M. D. Johns Hopkins, 1910. Assistant in Medicine, 1910-12; Instructor in Pathology, Stanford, 1912-14. Present position, 1914—.

WILLIAM BELL DOWNING, Professor of Voice and Public School Music.

Graduate, Drake, 1905; Professor of Voice, Highland Park, 1907-09; Instructor in Voice, Drake, 1909-13. Present position, 1914—.

HERMAN OLCOTT, Professor of Physical Education.

A. B. Yale, 1901. Present position, 1915—.

RAPHAEL DORMAN O'LEARY, Professor of English.

A. B. Kansas, 1893; A. B. Harvard, 1895. Assistant Professor of English, Kansas, 1895-1906; Associate Professor of Rhetoric, 1906-15. Present position, 1915.

RAYMOND ALFRED SCHWEGLER, Professor of Education.

A. B. Brown, 1899; A. M. Ottawa, 1907; Associate Professor of Education, Kansas, 1907-15. Present position, 1915—.

ARTHUR JEROME BOYNTON, Professor of Economics.

A. B. Harvard, 1901; A. M. Columbia, 1902. Assistant Professor of Economics, 1903-10; Associate Professor of Economics, Kansas, 1910-15. Present position, 1915—.

CHARLES HAMILTON ASHTON, Professor of Mathematics.

A. B. Union, 1887; A. M. Harvard, 1893; Ph. D. Munich, 1909. Instructor in Mathematics, Harvard, 1894-1903; Assistant Professor of Mathematics, Kansas, 1903-10; Associate Professor of Mathematics, 1910-15. Present position, 1915—.

WORT S. MORSE, Professor of Violin.

B. S. Central Wesleyan, 1898. Instructor in Violin, Kansas, 1909-15. Present position, 1915—.

ARTHUR CLARK TERRILL, Professor of Mining and Ore Dressing.

E. M. Colorado School of Mines, 1905; A. M. Columbia, 1914. Assistant Professor of Mining, Metallurgy and Geology, University of Oregon, 1906-07; Professor of Mining and Metallurgy, Oregon, 1907-08; Head of Mining Department and Professor of Metallurgy, University of Idaho, 1908-09; Assistant in Mine Surveying, Columbia University, Summer of 1914. Present position, 1915—.

HAROLD LANCASTER BUTLER, Dean of the School of Fine Arts and Professor of Voice.

A. B. Valparaiso, 1894; Graduate, School of Music, Valparaiso, 1895; LL. B. Valparaiso, 1896; Graduate, Gottschalk Lyric School, Chicago, 1898; Instructor in Voice, Valparaiso, 1896-98; Director, School of Music, Valparaiso, 1890-1904; Director Vocal Department, College of Fine Arts, Syracuse, 1904-15. Present position, 1915—.

ARTHUR NEVIN, Professor of Ensemble and Music Extension.

Conductor of Chorus Work, McDowell Memorial Association. Present position, 1915—.

HARRY CONRAD THURNAU, Professor of Germanic Languages and Literatures.

A. B. Michigan, 1899; A. M. Michigan, 1903; Ph. D. Michigan, 1909. Instructor in German, University of Michigan, 1905-12; Associate Professor of German, Oberlin College, 1912-15. Present position, 1915—.

FREDERICK JAMES KELLY, Dean of the School of Education, Director of the Summer Session and Professor of Education.

A. B. Nebraska, 1902; Ph. D. Columbia, 1914. Director of the Training School, State Normal, Spearfish, S. Dak., 1908-12; Director of the Training School, State Normal, Emporia, Kan., 1914-15. Present position, 1915—.

JACOB BLOCK, Professor of Genito-urinary Surgery.

M. D. Medical College of Ohio, 1879. Present position, 1905—.

JOHN WALTER PERKINS, Professor of Surgery.

A. B. Harvard, 1882; M. D. Harvard, 1886. Present position, 1905—.

S. S. GLASSCOCK, Professor of Psychiatry.

M. D. Rush, 1887. Present position, 1905—.

JOSEPH S. SAWTELL, Professor of Otorhinolaryngology.

M. D. College of Physicians and Surgeons, Baltimore, 1886. Present position, 1905—.

ISADORE JULIUS WOLF, Professor of Internal Medicine.

M. D. Munich, 1887. Present position, 1905—.

FRANKLIN E. MURPHY, Professor of Clinical Medicine.

M. D. Pennsylvania, 1893. Present position, 1907—.

LYMAN L. UHLS, Professor of Psychiatry.

M. D. Rush, 1884. Present position, 1911—.

ZACHARIAH NASON, Professor of Clinical Obstetrics.

M. D. College of Physicians and Surgeons, Baltimore, 1888. Present position, 1912—.

EDWARD JAMES CURRAN, Professor of Ophthalmology.

M. D. Harvard, 1908; D. Ophth. Oxon, 1910. Present position, 1913—.

PETER THOMAS BOHAN, Professor of Clinical Medicine.

M. D. Rush, 1900. Instructor in Internal Medicine, 1905. Present position, 1914—.

GEORGE M. GRAY, Professor of Clinical Surgery.

M. D. Kansas City Medical, 1879; M. D. Bellvue, 1880. Present position, 1914—.

JESSE E. HUNT, Professor of Pediatrics.

M. D. Western Reserve, 1902. Associate Professor of Medicine, 1905-15. Present position, 1915—.

WILLIAM WADDELL DUKE, Professor of Experimental Medicine.

Ph. B. Yale, 1904; M. D. Johns Hopkins, 1908. Present position, 1913—.

ASSOCIATE PROFESSORS.

MILES WILSON STERLING, Associate Professor of Greek.

A. B. Kansas, 1883; A. M. Kansas, 1893. Assistant in Latin and Greek, Kansas, 1883-85; Assistant in Greek, 1885; Assistant Professor of Greek, Kansas, 1896-1901. Present position, 1901—.

HANNAH OLIVER, Associate Professor of Latin.

A. B. Kansas, 1874; A. M. Kansas, 1888. Assistant Professor of Latin, 1890-1905. Present position, 1905—.

SELDEN LINCOLN WHITCOMB, Associate Professor of English Literature.

A. B. Grinnell, 1887; A. M. Columbia, 1893. Professor of English Literature, Grinnell, 1895-1905. Present position, 1905—.

MARTIN EVERETT RICE, Associate Professor of Physics and Electrical Engineering.

B. S. Kansas, 1891; M. S. Kansas, 1893. Instructor in Physics, Kansas, 1892-95; Assistant Professor of Physics, Kansas, 1895-1901. Present position, 1906—.

DAVID LESLIE PATTERSON, Associate Professor of European History.

B. S. Pennsylvania State, 1895. Instructor in History, Wisconsin, 1905-08; Associate Professor of History, Kansas, 1908-1914; Acting Associate Professor of History, Wisconsin, 1914-15. Present position, 1908—.

LOUIS EUGENE SISSON, Associate Professor of Rhetoric.

A. B. Leland Stanford, 1904; A. M. Harvard, 1909. Assistant Professor of Rhetoric, 1904-05. Present position, 1905—.

CLARENCE ADDISON DYKSTRA, Associate Professor of History.

A. B. Iowa, 1903. Instructor in History and Political Science, Ohio State, 1903-09. Present position, 1909—.

ALBERTA LINTON CORBIN, Associate Professor of German.

A. B. Kansas, 1893; Ph. D. Yale, 1902. Assistant Professor of German, Kansas, 1902-11. Present position, 1911—.

GEORGE JUSSEN HOOD, Associate Professor of Mechanical Drawing.

B. S. Kansas, 1902. Assistant Professor of Mechanical Drawing, Kansas, 1902-11. Present position, 1911—.

WILLIAM ASBURY WHITAKER, Associate Professor of Metallurgy and Director of State Chemical Research.

Ph. B. North Carolina, 1904; A. M. Columbia, 1905. Assistant in Chemistry, North Carolina, 1903-04; Instructor in Chemistry, City of New York, 1906-11. Present position, 1911—.

WILLIAM JACOB BAUMGARTNER, Associate Professor of Zoölogy.

A. B. Kansas, 1900; A. M. Kansas, 1901. Instructor in Zoölogy, Kansas, 1904-05; Assistant Professor of Zoölogy, Kansas, 1905-13. Present position, 1913—.

HENRY OTTO KRUSE, Associate Professor of German.

A. B. Kansas, 1894; A. M. Kansas, 1903. Instructor in German, Kansas, 1904-05; Assistant Professor of German, 1905-13. Present position, 1913—.

LEON NELSON FLINT, Associate Professor of Journalism.

A. B. Kansas, 1897. Lecturer in Journalism, Kansas, 1906-09; Assistant Professor of Journalism, 1909-13. Present position, 1913—.

CLARENCE CORY CRAWFORD, Associate Professor of European History.

A. B. Kansas, 1903; A. M. Kansas, 1904; Ph. D. Wisconsin, 1906. Assistant in History, Wisconsin, 1904-06; Instructor in History, Missouri, 1906-07; Assistant Professor of European History, Kansas, 1907-13. Present position, 1913—.

EARLE WALTER MURRAY, Associate Professor of Latin.

A. B. Kansas, 1904. Assistant Professor of Latin, Kansas, 1907-13. Present position, 1913—.

WILLIAM SAVAGE JOHNSON,⁴ Associate Professor of English Literature.

A. B. Yale, 1900; Ph. D. Yale, 1905. Instructor, Yale, 1905-08; Assistant Professor of English Literature, Kansas, 1908-13. Present position, 1913—.

WILLIAM HENRY TWENHOFEL, Associate Professor of Geology and State Geologist.

A. B. Yale, 1908; A. M. Yale, 1910; Ph. D. Yale, 1912. Assistant in Geology, Yale, 1908-10; Assistant Professor of Geology, Kansas, 1910-13. Present position, 1913—.

VICTOR EMANUEL HELLEBERG, Associate Professor of Sociology.

A. B. Yale, 1883; LL. B. Cincinnati, 1885. Instructor in Sociology, Chicago, 1908-10; Assistant Professor of Sociology, Kansas, 1910-13. Present position, 1913—.

FREDERICK HUBBARD SIBLEY, Associate Professor of Mechanical Engineering and Director of Fowler Shops.

Ph. B. Brown, 1898; M. E. Case, 1904. Assistant Professor of Mechanical Engineering, Case, 1907; Professor of Mechanical Engineering, Alabama, 1912; Assistant Professor of Mechanical Engineering, Kansas, 1912-13. Present position, 1913—.

CHARLES ARTHUR HASKINS, Associate Professor of Sanitary Engineering.

B. S. Kansas, 1910. Instructor of Civil Engineering, Kansas, 1911; Assistant Professor of Civil Engineering, Kansas, 1912. Present position, 1913—.

DE WITT CLINTON CROISSANT,⁵ Associate Professor of English Language.

A. B. Princeton, 1899; Ph. D. Princeton, 1911. Instructor in English, Colorado, 1901-02; Instructor in English, George Washington, 1905-06; Assistant Professor of English, George Washington, 1906-10; Assistant Professor of English, Kansas, 1911-13. Present position, 1914—.

GEORGE ELLETT COGHILL, Associate Professor of Anatomy.

A. B. Brown, 1896; M. S. New Mexico, 1899; Ph. D. Brown, 1902. Assistant Professor of Biology, New Mexico, 1899-1901; Professor of Biology, Pacific, 1902-06; Professor of Biology, Willamette, 1906-07; Professor of Zoölogy, Denison, 1907-13. Present position, 1913—.

FLORENCE MARLEY BROWN, Adviser of Women.

Present position, 1914—.

GEORGE OTIS FOSTER, Registrar.

A. B. Kansas, 1901. Present position, 1899—.

FREDERIC NEWTON RAYMOND, Associate Professor of Rhetoric.

A. B. Kansas, 1896; A. M. Columbia, 1897. Assistant Professor of Rhetoric, Kansas, 1901-14. Present position, 1914—.

MARGARET LYNN, Associate Professor of English Literature.

B. S. Tarkio, 1899; A. M. Nebraska, 1900. Assistant Professor of English Literature, Kansas, 1901-14. Present position, 1914—.

ELISE NEUEN SCHWANDER, Associate Professor of Romance Languages.

A. B. Kansas, 1898; Ph. D. Yale, 1913. Assistant Professor of Romance Languages, 1905-14. Present position, 1914—.

ARTHUR LESLIE OWEN, Associate Professor of Romance Languages.

A. B. Vermont, 1906; A. M. Illinois, 1909. Assistant Professor of Romance Languages, Kansas, 1910; Instructor in Romance Languages, Chicago, 1913. Present position, 1914—.

HERMAN CAMP ALLEN, Associate Professor of Chemistry.

A. B. McPherson, 1904; A. M. Kansas, 1905; Ph. D. Cornell, 1912. Assistant Professor of Chemistry, 1910-14. Present position, 1914—.

4. On leave of absence.

5. On leave of absence.

WILLIAM WATSON DAVIS, Associate Professor of American History.

B. S. Alabama Polytechnic Institute, 1903; M. S. Alabama Polytechnic Institute, 1904; A. M. Columbia, 1906; Ph. D. Columbia, 1913. Lecturer in History, Columbia, 1908-09; Assistant Professor of American History, Kansas, 1910-14. Present position, 1914—.

CLARENCE ANTHONY JOHNSON, Associate Professor of Electrical Engineering.

B. S. Nebraska, 1906; E. E. Nebraska, 1915. Assistant Professor of Electrical Engineering, Kansas, 1908-14. Present position, 1914—.

CARL FERDINAND NELSON, Associate Professor of Physiological Chemistry.

A. B. Wisconsin, 1908; A. M. Wisconsin, 1910; Ph. D. Wisconsin, 1912. Instructor in Chemistry, Iowa, 1908-11; Instructor in Chemistry, Illinois, 1912. Present position, 1913—.

WILLIAM COLEMAN MCNOWN, Associate Professor of Civil Engineering.

B. S. Wisconsin, 1903. Instructor in Civil Engineering, Cornell, 1905-07; Professor of Civil Engineering, Earlham, 1907-09; Assistant Professor of Civil Engineering, Kansas, 1913-14. Present position, 1914—.

ALICE LITTLEJOHN GOETZ, Associate Professor of Physical Education.

Graduate, Sargent Normal School, 1902; Graduate, Harvard Summer School of Physical Education, 1905; M. D. Howard University Medical, 1906. Associate Professor of Physical Education, Ohio, 1907-14. Present position, 1914—.

CHARLES ALBERT SHULL, Associate Professor of Plant Physiology and Genetics.

B. S. Chicago, 1905; Ph. D. Chicago, 1915. Assistant Professor of Biology, Transylvania, 1906-08; Professor of Biology, Transylvania, 1908-12; Assistant Professor of Botany, Kansas, 1912-15. Present position, 1915—.

ULYSSES GRANT MITCHELL, Associate Professor of Mathematics.

A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Princeton, 1910. Instructor in Mathematics, Kansas, 1906-08; Assistant Professor of Mathematics, Kansas, 1910-15. Present position, 1915—.

ALFRED HIGGINS SLUSS, Associate Professor of Mechanical Engineering.

B. S. in Mech. Eng. Illinois, 1901. Assistant Professor of Mechanical Engineering, 1908-15. Present position, 1915—.

JOSEPH AUGUSTUS FARRELL, Associate Professor of Voice.

Graduate Royal Conservatory, Leipsic; Professor of Violin, Kansas, 1893-96; Professor of Voice and Violin, Kansas, 1896-1900; Instructor in Voice, Kansas, 1913-15. Present position, 1915—.

ARTHUR E. HERTZLER, Associate Professor of Surgery.

M. D. Northwestern, 1894; Ph. D. Illinois Wesleyan, 1902. Present position, 1905—.

WILLIAM FREDERICK KUHN, Adjunct Professor of Psychiatry.

A. M. Wittenberg, 1878; M. D. Jefferson Medical, 1885. Present position, 1905—.

WILLIAM L. MCBRIDE, Associate Professor of Dermatology.

M. D. Rush, 1901. Present position, 1905—.

WILLIAM KIRK TRIMBLE, Associate Professor of Clinical Pathology.

M. D. Kansas City Medical, 1900. Present position, 1905—.

JOHN N. SCOTT, Associate Professor of Electrotherapeutics.

Ph. G. Kansas, 1887; M. D. University Medical, 1896. Present position, ———.

WALTER S. SUTTON, Associate Professor of Surgery.

A. B. Kansas, 1900; A. M. Kansas, 1901; M. D. Columbia, 1907. Present position, 1909—.

ANDREW L. SKOOG, Associate Professor of Neurology.

M. D. Northwestern, 1902. Present position, 1911—.

RICHARD L. SUTTON, Associate Professor of Dermatology.

M. D. University Medical College, 1901; M. D. George Washington, 1904. Present position, 1911—.

CHARLES CLINTON CONOVER, Associate Professor of Clinical Medicine.

B. S. Missouri, 1896; M. D. University Medical, 1901. Present position, 1913—.

WILLIAM J. V. DEACON, Associate Professor of Preventive Medicine.

Present position, 1914—.

ORVAL JAMES CUNNINGHAM, Associate Professor of Surgery.

M. D. Rush, 1904. Present position, 1915—.

ASSISTANT PROFESSORS.

CHARLES MORGAN STERLING, Assistant Professor of Pharmacognosy.

A. B. Kansas, 1897. Present position, 1901—.

EDWIN FISKE STIMPSON, Assistant Professor of Physics.

B. S. Kansas, 1890. Instructor in Physics, 1901-05. Present position, 1905—.

CHARLES COCHRAN, Assistant Professor of Mechanical Drawing.

B. S. in M. E. Colorado, 1906. Present position, 1906—.

FRANK EVERETT JONES, Superintendent of Fowler Shops and Assistant Professor of Pattern Making and Founding.

Instructor in Carpentry and Pattern Making, 1903-06; Assistant Professor of Pattern Making and Foundry, 1906-15. Present position, 1915—.

JAMES EDWARD TODD, Assistant Professor of Geology and Mineralogy.

A. B. Oberlin, 1867; M. A. Oberlin, 1870. Professor of Natural Sciences, Tabor, 1871-92; Adjunct Professor of Natural Sciences, Beloit, 1881-83; Professor of Geology and Mineralogy, South Dakota, 1892-1903. Present position, 1907—.

HARRIET GREISSINGER, Assistant Professor of Piano.

Mus. B. Kansas, 1895. Instructor in Piano, 1902-07. Present position, 1907—.

WILLIAM PHILIP WARD,⁶ Assistant Professor of Romance Languages.

A. B. Western Reserve, 1906. Present position, 1908—.

EDWARD MAURICE BRIGGS, Assistant Professor of German, and University Marshal.

A. B. Nebraska, 1904; A. M. Kansas, 1908. Instructor in German, 1906-10. Present position, 1910—.

ALBERT MOREY STURTEVANT, Assistant Professor of German.

A. B. Harvard, 1899; A. M. Harvard, 1901; Ph. D. Harvard, 1905. Instructor in German, 1908-10. Present position, 1910—.

GEORGE NATHANIEL WATSON, Assistant Professor of Pharmacy, in charge of Drug Laboratory.

A. B. Michigan, 1904; B. S. Michigan, 1908; Ph. C. Michigan, 1908. Instructor in Pharmacy, 1909-10. Present position, 1910—.

LULU GARDNER, Assistant Professor of Rhetoric.

A. B. Kansas, 1905. Instructor in Rhetoric, Kansas, 1905-09. Present position, 1910—.

CALVERT JOHNSON WINTER, Assistant Professor of Romance Languages.

Ph. B. Hiram, 1905. Instructor in Romance Languages, 1909-11. Present position, 1911—.

6. On leave of absence.

CLIFFORD CAUDY YOUNG, Assistant Professor of Chemistry, and Director of State Water Survey.

A. B. Kansas, 1910. Present position, 1910—.

ARTHUR MITCHELL, Assistant Professor of Philosophy.

A. B. Yale, 1894; Ph. D. Harvard, 1910. Present position, 1911—.

FREDERICK A. G. COWPER, Assistant Professor of Romance Languages.

A. B. Trinity, 1906; A. M. Trinity, 1911. Professor of Romance Languages, Drury, 1908-11. Present position, 1911—.

HERBERT E. JORDAN, Assistant Professor of Mathematics.

A. B. McMaster, 1900; A. M. McMaster, 1901; Ph. D. Chicago, 1904. Instructor in Mathematics, Brandon College, 1904-06; Instructor in Mathematics and Physics, Michigan College of Mines, 1906-11. Present position, 1911—.

GEORGE ELLSWORTH PUTNAM, Assistant Professor of Economics.

A. B. Kansas, 1907; A. M. Yale, 1908; B. Litt. Oxon, 1911. Present position, 1911—.

WILLIAM REES B. ROBERTSON, Assistant Professor of Zoölogy.

A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Harvard, 1915. Instructor in Zoölogy, Kansas, 1907-09. Present position, 1912—.

NOBLE PIERCE SHERWOOD, Assistant Professor of Bacteriology.

B. S. Kansas, 1905; A. M. Kansas, 1911. Instructor Bacteriology, Kansas, 1910-13. Present position, 1913—.

THEODORE TOWNSEND SMITH, Assistant Professor of Physics.

A. B. Harvard, 1907; A. M. Harvard, 1908. Instructor in Physics, Kansas, 1910-13. Present position, 1913—.

FLOYD CARLTON DOCKERAY, Assistant Professor of Psychology.

A. B. Michigan, 1907; A. M. Michigan, 1909; Ph. D. Michigan, 1915. Assistant Instructor in Psychology, Michigan, 1908-09; Instructor in Psychology, Kansas, 1910-13. Present position, 1913—.

HERBERT BARKER HUNGERFORD, Assistant Professor of Entomology.

A. B. Kansas, 1911; A. M. Kansas, 1913. Instructor Entomology, Kansas, 1911-13. Present position, 1913—.

FREDERICK WILLIAM BRUCKMILLER, Chemist of State Water Survey.

A. B. Kansas, 1912; A. M. Kansas, 1915. Instructor in Chemistry, Kansas, 1912-13. Present position, 1913—.

PAUL VANCE FARAGHER, Assistant Professor of Chemistry.

A. B. Kansas, 1909; Ph. D. Massachusetts Institute of Technology, 1913. Present position, 1913—.

EDMUND DRESSER CRESSMAN, Assistant Professor of Latin.

A. B. Kansas, 1910; A. M. Kansas, 1911; Ph. D. Yale, 1913. Present position, 1913—.

FRED REEDER HESSER,⁷ Assistant Professor of Sanitary Engineering.

B. S. Kansas, 1910. Assistant Highway Engineer, Kansas State Agricultural College, 1912-13. Present position, 1913—.

CHARLES HOMER TALBOT, Head of Municipal Reference Bureau.

A. B. Wisconsin, 1910. Present position, 1913—.

JOHN DILLER GARVER, Assistant Professor of Mechanical Engineering.

B. S. Kansas, 1910. Instructor in Mechanical Engineering, Kansas, 1912-14. Present position, 1914—.

7. Resigned February, 1916.

MARK SKIDMORE, Assistant Professor of Romance Languages.

A. B. Missouri, 1905; B. S. in Ed. Missouri, 1906; A. M. Illinois, 1909. Instructor in Romance Languages, Dartmouth, 1911-13. Present position, 1913—.

RALPH EMERSON CARTER, Assistant Professor of Education.

Ph. B. Franklin, 1906; A. M. Chicago, 1911. Instructor in Education, Texas, 1912-13. Present position, 1913—.

FRANK LOGAN BROWN, Assistant Professor of Mechanics.

B. S. in C. E. Colorado, 1911. Instructor in Civil Engineering, Colorado, 1912-13. Present position, 1913—.

WALTER STERRITT LONG, Assistant Professor of Chemistry, in charge of Food Laboratory.

A. B. Ohio Wesleyan, 1905; A. M. Ohio Wesleyan, 1908. Assistant in Chemistry, 1911-12. Present position, 1913—.

HOWARD TEMPLETON HILL, Assistant Professor of Public Speaking.

B. S. Iowa State College, 1910. Present position, 1913—.

NADINE NOWLIN, Assistant Professor of Zoölogy.

A. B. Kansas, 1903; A. M. Kansas, 1903. Instructor in Zoölogy, 1906-13. Present position, 1913—.

ANNA LOUISE SWEENEY, Assistant Professor of Piano.

Mus. B. Kansas, 1906. Instructor, Kansas, 1909. Present position, 1914—.

HERMAN DOUTHITT, Assistant Professor of Zoölogy.

A. B. Oklahoma, 1910; A. M. Illinois, 1911. Assistant in Zoölogy, Chicago, 1912-14. Present position, 1914—.

MAURICE HOLMES REES, Assistant Professor of Physiology.

A. B. Monmouth, 1904; A. M. Illinois, 1905. Professor of Biology, York, 1905-06; Professor of Biology, Tarkio, 1906-14. Present position, 1914—.

GEORGE WEATHERWORTH STRATTON, Assistant Professor of Chemistry.

A. B. Colorado, 1907; A. M. Ohio State, 1909; Ph. D. Ohio State, 1912. Instructor in Chemistry, Ohio State, 1909-12; Assistant Professor of Chemistry, Kansas, 1912-13. Present position, 1914—.

CHESTER ARTHUR BUCKNER,⁸ Assistant Professor of Education.

A. B. Iowa, 1909; A. M. Iowa, 1911. Present position, 1914—.

HARRY ASHTON ROBERTS, Assistant Professor of Civil Engineering.

B. S. Illinois, 1902. Present position, 1914—.

JOSEPH F. WELKER, Assistant Professor of Sanitary Engineering.

B. S. Clarkson School of Technology, 1913; M. of C. E. Harvard Graduate School of Applied Sciences, 1914. Present position, 1914—.

ELLIS BAGLEY STOUTER, Assistant Professor of Mathematics.

A. B., A. M. Drake, 1907; Ph. D. Illinois, 1911. Present position, 1914—.

HUBERT WILBUR NUTT, Assistant Professor of Education, and Principal of Oread Training School.

Ph. B. Chicago, 1914. Dean of Education, Marion Normal, 1909-12; Dean of Education, Muncie Normal, 1913-14. Present position, 1914—.

WILLIAM MCGLASHAN DUFFUS, Assistant Professor of Economics.

A. B. Leland Stanford, 1910; A. M. Wisconsin, 1913. Present position, 1915—.

8. On leave of absence, second semester.

GRACE MIRIAM CHARLES, Assistant Professor of Botany.

A. B. Oberlin, 1900; A. M. Chicago, 1905; Ph. D. Chicago, 1910. Instructor in Botany, Kansas, 1911-15. Present position, 1915—.

BENJAMIN J. CLAWSON, Assistant Professor of Bacteriology.

B. S. Central, 1909; A. M. Kansas, 1912. Instructor in Bacteriology, Kansas, 1912-15. Present position, 1915—.

JACOB OSCAR JONES, Assistant Professor of Hydraulics.

B. S. Kansas, 1912; M. S. Cornell, 1915. Instructor in Civil Engineering, Kansas, 1912-14. Present position, 1915—.

ALBERT CLAIRE HODGE, Assistant Professor of Economics and Commerce.

Graduate Ypsilanti Normal, 1909; Ph. B. Chicago, 1914. Instructor History and Political Science, State Normal, Winona, Minn., 1914-15. Present position, 1915—.

BLAINE FREE MOORE, Assistant Professor of Political Science.

A. B. Kansas, 1901; A. M. Illinois, 1908; Ph. D. Columbia, 1913. Division Superintendent and Member of the Provincial Council in the Philippine Islands, 1901-06; Instructor in Government, University of Michigan, 1909-10; Assistant Professor of Political Science, George Washington University, 1910-15; Lecturer in Political Science, University of Wisconsin, 1913-14. Present position, 1915—.

HAROLD GREENE INGHAM, Secretary of Correspondence Study Department.

A. B. Milton, 1909. Instructor in Business Administration, Wisconsin, 1913-15. Present position, 1915—.

JOSEPH GRANGER BRANDT, Assistant Professor of Greek.

Ph. B. Lawrence College, 1913; Ph. D. Wisconsin, 1911. Instructor in Latin, Wisconsin, 1908-11; Carnegie Research Associate, American School of Classical Studies in Rome, 1911-12; Instructor in Latin, Wisconsin, 1912-13; Assistant Professor of Latin, Wisconsin, 1913-14; Assistant Professor of Latin and Greek, Wisconsin, 1914-15. Present position, 1915-16.

JOSEPHINE MAY BURNHAM, Assistant Professor of English.

Ph. B. University of Chicago, 1901; Ph. D. Yale, 1910. Instructor in English, Wellesley College, 1902-12; Associate Professor of English, Wellesley College, 1912. Present position, 1915-16.

JOHN WAINRIGHT EVANS, Assistant Professor of Journalism.

A. B. Princeton, 1907. Instructor in English, University of Arkansas, 1912-15. Present position, 1915—.

JOHN G. HAYDEN, Assistant Professor of Surgery.

B. S. Chicago, 1902; M. D. Rush, 1904. Present position, 1909—.

EDWARD PARK HALL, Assistant Professor Otorhinolaryngology.

M. D. Ensworth Medical, 1897. Present position, 1911—.

ROBERT DOUGLAS IRLAND, Assistant Professor of Obstetrics.

M. D. Kansas, 1909. Instructor in Obstetrics, Kansas, 1911-15. Present position, 1915—.

INSTRUCTORS.

EUGENE SMITH, Demonstrator in Anatomy.

M. D. Rush 1876. Present position, 1903—.

LALIA VIOLA WALLING, Instructor in Physiology.

A. B., A. M. Kansas, 1907. Present position, 1908—.

ESTHER WILSON, Instructor in German.

A. B. Kansas, 1901; A. M. Kansas, 1902. Present position, 1908—.

MAY GARDNER, Instructor in Romance Languages.

A. B. Kansas, 1897. Present position, 1909—.

ALICE WINSTON, Instructor in Rhetoric.

A. B. Chicago, 1898; A. M. Chicago, 1903. Present position, 1909—.

MARIA LEVERING BENSON, Instructor in Design and Ceramics.

Graduate, Newcomb Art School. Present position, 1909—.

ROSE RUTH MORGAN, Instructor in Rhetoric.

A. B. Kansas, 1894; A. M. Kansas, 1905. Present position, 1910—.

AMIDA STANTON, Instructor in Romance Languages.

A. B. Kansas, 1904; A. M. Kansas, 1910. Present position, 1910—.

HELEN MAUD CLARKE, Instructor in Correspondence Study.

A. B. Kansas, 1903; A. M. Kansas, 1907; Ph. D. Cornell, 1910. Present position, 1910—.

HELEN GAILE JONES, Instructor in German.

Ph. B. De Pauw, 1900; A. M. Kansas, 1914. Present position, 1910—.

JOHN JEFFERSON WHEELER, Instructor in Mathematics.

A. B. Indiana, 1905; A. M. Kansas, 1913. Professor of Mathematics, Friends, 1905-11. Present position, 1911—.

HUBERT WILTFONG, Instructor in Forging.

Present position, 1911—.

NELLIE MAY STEVENSON, Instructor in Correspondence Study.

A. B. Kansas, 1907. Present position, 1911—.

HOMER OTIS LICHTENWALTER, Instructor in Chemistry.

B. S. McPherson, 1911-12. Present position, 1912—.

HEARTY EARL BROWN, Instructor in Rhetoric.

A. B. Michigan, 1909; A. M. Michigan, 1910. Present position, 1912—.

LEON B. MCCARTY, Instructor in Rhetoric.

A. B. Ohio State, 1910; A. M. Ohio State, 1911. Present position, 1912—.

EMMA PALMER, Instructor in German.

A. B. Kansas, 1905; A. M. Kansas, 1909. Present position, 1912—.

SARA GRANT LAIRD, Instructor in Rhetoric.

A. B. Oberlin, 1904; A. M. Columbia, 1912. Present position, 1912—.

MYRTLE GREENFIELD, Bacteriologist of State Water Survey.

A. B. Kansas, 1911; A. M. Kansas, 1912. Present position, 1912—.

JOSEPH COLBERT MCCANLES, Instructor in Band Instruments.

B. S. Kansas Christian, 1907; LL. B. Kansas, 1909. Present position, 1910—.

MAUD MILLER, Instructor in Piano.

Mus. B. Kansas, 1898. Present position, 1904—.

JOHN BENNETT WHELAN, Instructor in Chemistry.

A. B. Hillsdale, 1903; A. M. Nebraska, 1908. Present position, 1913—.

PEARL EMLEY, Instructor in Piano and Organ.

Mus. B. Kansas, 1909; Mus. M. Kansas, 1913. Present position, 1913—.

SOLOMON LEFSCHETZ, Instructor in Mathematics.

M. E. Ecole Centrale, 1905; Ph. D. Clark, 1911. Instructor in Mathematics, Nebraska, 1911-13. Present position, 1913—.

EVANGELINE DOWNEY, Instructor in Home Economics.

A. B., B. S. Wyoming, 1910; A. M. Chicago, 1913. Present position, 1913—.

CORA IRENE REYNOLDS, Instructor in Voice.

Mus. B. Kansas, 1912. Present position, 1913—.

ERNEST ELMER LYDER, Chemical Research Assistant.

B. S. Kansas, 1913; M. S. Kansas, 1914. Present position, 1913—.

HELEN RHODA HOOPES, Instructor in Rhetoric.

A. B. Kansas, 1913; A. M. Kansas, 1914. Present position, 1914—.

CAROLINE BAUMANN SPANGLER, Instructor in German.

B. D. Kansas, 1881; A. B. Kansas, 1883. Present position, 1914—.

WILLARD AUSTIN WATTLES, Instructor in Rhetoric.

A. B. Kansas, 1909; A. M. Kansas, 1911. Instructor in English, Massachusetts Agricultural College, 1911-14. Present position, 1914—.

ESTHER LYDIA SWENSON, Instructor in Rhetoric.

A. B. Minnesota, 1911; A. M. Minnesota, 1914. Present position, 1914—.

CHARLES BAILE DRAKE,⁹ Instructor in Romance Languages.

A. B. Missouri, 1908. Present position, 1914—.

HERMAN ADOLPH LORENZ, Instructor in Physical Education.

Graduate Springfield Y. M. C. A. College, 1914. Present position, 1914—.

HARRY VICTOR EMANUEL PALMBLAD, Instructor in German.

A. B. Columbia, 1907; A. M. Columbia, 1910. Instructor in Extension Division, Columbia, 1910-11. Instructor in German, Western Reserve, 1911-12; Instructor in German, Columbia, 1912-14. Present position, 1914—.

MARGARETHE CAROLINE HOCHDOERFER, Instructor in German.

A. B. Wittenberg, 1906; A. M. Illinois, 1909. Present position, 1914—.

IVAN PAUL PARKHURST, Instructor in Chemistry.

B. S. Kansas, 1914. Present position, 1914—.

WINFRED WEEDEN HAWKINS, Instructor in German.

A. B. Missouri, 1913; A. M. Missouri, 1914. Present position, 1914—.

HAZEL KATHERINE ALLEN, Instructor in Home Economics.

Ph. B. Chicago, 1913. Present position, 1914—.

CHARLES WESLEY WHITE, Instructor in Machine-shop Practice.

Present position, 1914—.

CLARENCE ESTES, Analyst in Food Laboratory.

B. S. in Chem. Eng. Missouri, 1908; Chem. Eng. Missouri, 1909. Instructor, Iowa, 1909-12. Present position, 1914—.

FRANCIS MONTGOMERY VEATCH, Chemical Research Assistant.

B. S. Kansas, 1914. Present position, 1914—.

ARTHUR WILLIAM LARSEN, Instructor of Mathematics.

A. B. Wisconsin, 1913; A. M. Wisconsin, 1915. Assistant Department of Mathematics, University of Wisconsin, 1914-15. Present position, 1915—.

HARRY MONROE CURFMAN, Instructor in Electrical Engineering.

B. S. Kansas, 1915. Present position, 1915—.

HERBERT FLINT, Instructor in Rhetoric.

A. B. Kansas, 1914. Present position, 1915—.

HAZEL HELEN PRATT, Instructor in Physical Education.

A. B. Ohio State, 1914; Graduate, Harvard School of Physical Education, 1915. Physical Director, Western College for Women, Oxford, Ohio, 1914-15. Present position, 1915—.

LEONARD LEO STEIMLEY, Instructor in Mathematics.

A. B. Indiana, 1912; A. M. Indiana, 1913. Present position, 1915—.

LAURENS ELLIS WHITEMORE, Instructor in Physics.

A. B. Washburn College, 1914; A. M. Kansas, 1915. Present position, 1915—.

KARL JOHN HOLZINGER, Instructor in Mathematics.

A. B. Minnesota, 1915. Present position, 1915—.

GEORGE BELCHIC, Chemical Research Assistant.

B. S. Pennsylvania State College, 1914; M. S. Kansas, 1915. Assistant in Mining, Kansas, 1914-15. Present position, 1915—.

OSCAR LEWIS MAAG, Instructor in Chemistry.

B. S. Kansas, 1913. Assistant Instructor, Kansas, 1913-15. Present position, 1915—.

CLIFFORD WINSLOW SEIBEL, Instructor in Chemistry.

B. S. Kansas, 1913. Present position, 1913—.

OSCAR ROCKLUND, Instructor in Foundry.

Present position, 1913—.

PERCY B. SHOSTAC, Instructor in Rhetoric.

A. B. Wisconsin, 1915. Present position, 1915—.

CLARENCE SMITH, Instructor in Physiology.

A. B. Kansas, 1915. Assistant Department of Physiology and Experimental Pharmacology, 1913-15. Present position, 1915—.

BENJAMIN PERCY YOUNG, Field Assistant in Entomology.

B. S. Kansas, 1908. Present position, 1915—.

AVIS GWINN, Instructor in Home Economics.

A. B. Illinois, 1914. Present position, 1915—.

FRANCIS ELLIS JOHNSON, Instructor in Electrical Engineering.

A. B. Wisconsin, 1906; E. E. Wisconsin, 1909. Instructor in Electrical Engineering, Rice Institute, 1912-15. Present position, 1915—.

GLADYS ELIZABETH ELLIOTT, Instructor in Physical Education.

A. B. Kansas, 1913. Present position, 1915—.

RICHARD LEONIDAS GRIDER, Instructor in Mining.

E. M. Colorado School of Mines, 1905. Instructor in Mining, University of Oregon, 1909-10. Present position, 1915—.

WALTER BLAINE BODENHAFFER, Instructor in Sociology.

A. B. Transylvania, 1906; LL. B. Indiana, 1912; A. M. Kansas, 1915. Present position, 1915—.

INGEBRIGT LILLEHEI,¹ Instructor in Romance Languages.

A. B. Minnesota, 1908; A. M. Minnesota, 1909; Ph. D. Illinois, 1914. Instructor, Northwestern University, 1914-15.

1. Resigned February, 1916.

PETER ANTON FREDERIK APPELBOOM, Instructor in Romance Languages.
Graduate, Academie Royale Maritime of Holland. Present position, February, 1915—.

CARL MARCUS MELOM, Instructor in Romance Languages.

B. L. Minnesota, 1901; M. A. 1902, Minnesota. Instructor in French and Spanish, University of Minnesota, 1904-14; Teaching Assistant, Stanford, 1914-15. Present position, February, 1916—.

CLARENCE B. FRANCISCO, Instructor in Orthopedic Surgery.

M. D. Kansas, 1907. Present position, 1905—.

CLIFFORD C. NESSELRODE, Instructor in Surgical Anatomy.

M. D. Kansas, 1906. Present position, 1905—.

JOSEPH L. McDERMOTT, Instructor in Roentgen Therapy.

M. D. Kansas, 1907. Present position, 1914—.

THOMAS GROVER ORR, Instructor in Surgery, Chief of the Dispensary, Pathologist to the Bell Memorial Hospital.

A. B. University of Missouri, 1907; M. D. Johns Hopkins University, 1910. Instructor in Bacteriology, University of Kansas, 1915. Present position, 1915—.

HERBERT F. VANORDEN, Instructor in Gynecology and Obstetrics.

Ph. B. Yale, 1907; M. D. Johns Hopkins, 1910. Present position, 1915—.

ASSISTANT INSTRUCTORS.

LARRY M. PEACE, Preparator and Demonstrator in the Botanical Laboratory.

A. B. Kansas, 1901; A. M. Kansas, 1906. Present position, 1902—.

HANDEL T. MARTIN, Assistant Curator of Paleontology.

Present position, 1907—.

CHARLES D. BUNKER, Assistant Curator of Mammals, Birds and Fishes.

A. B. Kansas, 1901; A. M. Kansas, 1906. Present position, 1902—.

RAYMOND BEAMER, Assistant Curator of the Entomological Collections.

A. B. Kansas, 1913. Present position, 1914—.

KATE SEARS, Assistant Instructor in Botany.

Present position, 1911—.

RUBY CORNELIA HOSFORD, Assistant Instructor in Entomology.

A. B. Kansas, 1909; A. M. Kansas, 1913. Present position, 1913—.

WILLIAM BYRON BROWN, Assistant Instructor in Journalism and Superintendent of Printing Plant.

Present position, 1913—.

AULEY McCAULEY,² Assistant Instructor in Chemistry.

A. B. Westminster, 1906. Present position, 1914—.

WILLIS GEORGE WHITTEN, Assistant Instructor in Architectural Engineering.

Present position, 1915—.

WENDELL MITCHELL LATIMER, Instructor in Chemistry.

A. B. Kansas, 1915. Present position, 1915—.

2. Resigned March 15, 1916.

RAY QUINCEY BREWSTER, Assistant Instructor in Chemistry.

A. B. Ottawa, 1914; A. M. Kansas, 1915. Present position, 1915—.

ERNEST JOY BALDWIN, Assistant Instructor in Chemistry.

B. S. Kansas, 1914. Assistant in State Chemical Research, University of Kansas, 1914-15. Present position, 1915—.

AVIS TALCOTT, Assistant Instructor in Chemistry.

A. B. Rockford College, 1906. Instructor in Chemistry, Iowa State College. Present position, 1915—.

EARL CLEVELAND O'ROKE, Assistant Instructor in Zoölogy.

A. B. Kansas, 1912. Present position, 1915—.

HARRY PARKER EVANS, Chemical Research Assistant.

A. B. Kansas, 1915. Present position, 1915—.

EMILY VICTORIA BERGER,³ Assistant Instructor in Chemistry.

A. B. Kansas, 1914. Present position, March to June, 1916.

3. Appointed for second semester.

THE UNIVERSITY.

The University embraces the following schools and divisions:

THE GRADUATE SCHOOL.
THE COLLEGE OF LIBERAL ARTS AND SCIENCES.
THE SCHOOL OF ENGINEERING.
THE SCHOOL OF FINE ARTS.
THE SCHOOL OF LAW.
THE SCHOOL OF PHARMACY.
THE SCHOOL OF MEDICINE.
THE SCHOOL OF EDUCATION.

THE SUMMER SESSION DIVISION.
THE UNIVERSITY EXTENSION DIVISION.
THE DIVISION OF ATHLETICS.
THE DIVISION OF LIBRARIES.
THE DIVISION OF MUSEUMS.
THE DIVISION OF PUBLICATIONS.
THE DIVISION OF STATE SERVICE WORK.
THE DIVISION OF UNIVERSITY SURVEYS.

THE SCHOOLS.

THE GRADUATE SCHOOL.¹

The Graduate School is open to those holding a bachelor's degree from an institution of recognized standing.

The School confers the following advanced degrees: Doctor of philosophy, master of arts, master of science, civil engineer, mechanical engineer, engineer of mines, chemical engineer, and electrical engineer. Students who take the master's degree in the minimum period of one year must be fully prepared to do graduate work; those who are not find it necessary to take a longer time. The degree of doctor of philosophy may be given after three years of resident graduate work, the last year, at least, being spent at the University of Kansas. Graduates of engineering in this University and masters of science who majored in engineering in the Graduate School may become candidates for professional engineering degrees after three years of professional service.

For the encouragement of higher education, seventeen University fellowships are given to students who have excelled in undergraduate work, and ten fellowships are provided for graduates of Kansas colleges.

1. Detailed information will be found in Section II.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES.²

The College of Liberal Arts and Sciences offers a four-year curriculum, based upon a four-year high-school course and leading to the bachelor's degree. It includes courses offered by the following departments:

| | |
|-------------------------------------|------------------------------------|
| Bacteriology. | Journalism. |
| Botany. | Latin Language and Literature. |
| Chemistry. | Mathematics. |
| Design. | Music. |
| Economics and Commerce. | Physics and Astronomy. |
| English Language and Literature. | Public Speaking. |
| Entomology. | Philosophy and Psychology. |
| Geology and Mineralogy. | Physical Education. |
| Germanic Languages and Literatures. | Physiology. |
| Greek Language and Literature. | Romance Languages and Literatures. |
| History and Political Science. | Sociology. |
| Home Economics. | Zoölogy. |

While the courses are largely elective, the requirements governing election have been made with a view to securing a well-rounded program as well as a reasonable degree of specialization.

The purpose of the College is to provide a liberal education; but College students who intend to become candidates for professional degrees may elect certain courses in some of the professional schools.

THE SCHOOL OF ENGINEERING.³

Opportunities for study are offered to high-school graduates who wish to fit themselves for the technical branches of industrial work. The lines of study as they are formulated are under the usual engineering titles, as follows:

Civil Engineering, pertaining mainly to transportation, to design and construction of bridges and public works, to municipal and sanitary problems, and to government work in the survey of lands, in irrigation projects, etc.

Electrical Engineering, pertaining mainly to design, manufacture and operation of electric-power generating machinery, telephone apparatus and electrical instruments, and public utilities plants where such equipment is employed.

Mechanical Engineering, pertaining mainly to manufacturing processes and the plants for carrying on those processes, with especial attention given to the design and construction of machinery. Steam, gas, and refrigeration engineering are included.

Mining Engineering, emphasizing in equal degree the mining processes for coal and metal production, and the subsequent treatment of ores.

Chemical Engineering, pertaining mainly to chemical analytical methods and to the great variety of manufacturing processes which have a chemical basis.

2. Detailed information will be found in Section III.

3. Detailed information will be found in Section IV.

Architectural Engineering, devoted to the design and construction of all classes of buildings. Much attention is given to pure architectural design, as well as to structural problems.

Engineering and Administrative Science, in which economics courses are grouped with engineering fundamentals to form the basis for a business career with transportation or manufacturing enterprises.

The curriculum is prepared in two forms. One is more strictly technical and provides for the completion of the necessary amount of work in four years by those who are prepared to carry heavy work. Many students find it desirable to take more time. The degree given is bachelor of science in — Engineering. The other provides for five full years of work, the first year to be taken in the College of Arts and Sciences. The degree given is bachelor of science. The latter plan is recommended to all recent graduates of high schools.

THE SCHOOL OF FINE ARTS.⁴

The School of Fine Arts is made up of the Department of Music and the Department of Painting. It offers courses in piano, organ, violin, violoncello playing, voice culture, drawing and painting, and public-school music.

A teacher's certificate is given on completion of the two-year course in public-school music. A teacher's certificate is also given upon the completion of a three-year course in piano, organ, violin, violoncello, or voice culture. The four-year course in music leads to the degree of bachelor of music; in painting, to the degree of bachelor of painting.

The instructors in the School of Fine Arts receive compensation from the state for the work of the last year only. Rates for the other three years are given in the announcement of the School. (Section V of the catalog.)

THE SCHOOL OF LAW.⁵

The School of Law offers three years of legal instruction leading to the degree of bachelor of law. One year of college work in addition to graduation from an accredited high school is required for admission.

The object of the School is to teach the principles of the common law and to furnish a course of legal instruction that shall prepare the student to deal with legal problems and to practice in any of the United States.

Provision is also made to give those who do not expect to practice law but who desire a knowledge of certain branches of the law for business purposes such instruction as may be best fitted to their needs.

THE SCHOOL OF PHARMACY.⁶

The School of Pharmacy is organized to give instruction and practical training in all branches connected with the pharmaceutical profession. The work is open to graduates of accredited high schools.

-
4. Detailed information will be found in Section V.
 5. Detailed information will be found in Section VI.
 6. Detailed information will be found in Section VII.

Three definite courses may be pursued. The first leads to the degree of graduate in pharmacy; the second to pharmaceutical chemist; and the third, requiring four years for its completion, to bachelor of science.

Provisions are made for those desiring to fit themselves for food and drug analysts. The School also provides for research and advanced work in pharmaceutical chemistry, and for advanced analytical work in inorganic, vegetable, and animal products of a medicinal character.

Connected with the School is the state laboratory for drug analysis, which affords ample opportunity for those who are preparing for governmental and state work.

THE SCHOOL OF MEDICINE.⁷

The School of Medicine offers a four-year medical curriculum based on two years of college work and leading to the degree of doctor of medicine. The work of the first year and a half is done at Lawrence, in the main laboratories of the University. This work embraces the scientific subject, or so-called "medical sciences" and forms the basis for the practical work of the last two years. The last two and a half years' work is done at Rosedale, where Bell Memorial Hospital is owned and conducted by the University of Kansas.

The Training School for Nurses offers a course extending over two years and a half.

THE SCHOOL OF EDUCATION.

The School of Education has for its functions the professional training of teachers and superintendents and the maintenance of a bureau of school service.

Work done in the School of Education is based upon two years of college work and leads to the degree of bachelor of science in education. Candidates for the college degree of bachelor of arts or the graduate degree of master of arts may elect education courses subject to the regulations of the faculty concerned.

The faculty of the School of Education grants the University Teacher's Diploma to persons receiving any one of the degrees mentioned above, on the fulfillment of conditions described in the bulletin of the School of Education. This Teacher's Diploma entitles the holder to a Kansas State Teacher's Certificate.

THE DIVISIONS

SUMMER SESSION.

There are two terms of the Summer Session, of six weeks and four weeks, respectively, each independent of the other in the courses offered. The first term begins immediately after Commencement Day. The second term begins the day after the first term closes.

Most of the work offered in the Summer Session is chosen from the

7. Detailed information will be found in Section VIII.

courses given regularly in the various schools, and may be counted toward degrees in the same way as if taken in the regular academic year.

The maximum amount of credit that may be earned in the Summer Session is six hours for the first term and four hours for the second.

UNIVERSITY EXTENSION.

Through the Correspondence-study Department the following courses are offered:

First. Regular University studies which may, under approved conditions, be taken for credit toward a degree.

Second. High-school and preparatory studies for those who can not arrange to attend the established institutions.

Third. Vocational courses, which supply knowledge and training that have a direct bearing upon advancement and efficiency in given occupations.

Fourth. Advanced courses, designed to help persons, graduates and others, in professional or practical life to keep in touch with certain advancing conditions of science and knowledge.

Classes under regular University instructors can be offered in a limited number of communities where several desire to take up the same course. All courses offered by the Correspondence-study Department, whether taken for University credit or not, are on a uniform basis with reference to the amount of work covered. Work which is satisfactorily completed has, therefore, a definite value.

ATHLETICS.

Senate Regulation. The University Senate has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

Athletic Association. This association is organized to promote and control the intercollegiate athletics of the University of Kansas. The Chancellor is *ex officio* president, and there are five faculty and five student members. The athletic director is general manager of athletics. All forms of athletics are under the immediate control of the director and his assistants, who are also members of the faculty.

Intramural Athletics. The general athletics of the University include football, baseball, basket ball, track, tennis, and soccer. Intramural contests are held in all branches.

Intercollegiate Games. The University of Kansas is a member of the Missouri Valley Intercollegiate Athletic Association, and a full schedule of games in football, baseball, track, basket ball and tennis is arranged with members of that association and other educational institutions.

LIBRARIES.¹

The Libraries of the University contain 106,262 volumes and some 44,000 pamphlets. An annual appropriation of \$20,000 is devoted to the purchase of books. The periodical room receives 1119 periodicals and

1. Detailed information will be found in Section XII.

publications of learned societies, and 393 newspapers published in Kansas. The departments of Germanic Languages, Romance Languages, Latin, English, Education, American and European History, Sociology and Economics have special reading rooms in Spooner Library. The books on the shelves in these rooms vary with the courses given by the departments concerned.

There are eight departmental libraries housed in the buildings used by their respective departments or schools, and each in charge of an assistant.

MUSEUMS.¹

The scientific collections belonging to the University are grouped according to the teaching departments in charge.

The botanical collection contains 10,000 identified and labeled specimens.

The entomological collections comprise about 26,000 species and 300,000 specimens.

Geology is represented by extensive collections of specimens in economic, petrographic and mineralogical groups.

In paleobotany and paleontology the collection is one of the most complete in America.

The zoölogical collections are rich and varied.

The classical museum contains a collection of casts of Greek and Roman sculpture, *facsimile* reproductions of objects of art and utility, original coins, and photographs.

UNIVERSITY PUBLICATIONS.²

The University of Kansas Science Bulletin is maintained by the University as the medium for the publication of the results of original research by members of the University. Two or three volumes are issued in each academic year. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication.

University of Kansas Studies, Humanistic Series, is a series devoted to the presentation of the results of research along humanistic lines. The numbers are issued at irregular intervals. Each number is a complete monograph, and its price varies with cost of publication. Arrangements for exchange may be made by addressing the University Library.

The University Geological Survey Bulletins are issued from time to time as material for them is gathered.

The University Entomological Bulletins are reports issued in regular series from time to time, comprising the results of entomological investigations conducted by the University. These deal in part with applied problems of practical value referred to the University by various interests of the state, and in part with fundamental research problems presented by such investigations. These publications will be sent free to any citizen of the state upon application.

1. Detailed information will be found in Section XII.

2. More detailed information will be found in Section XII.

The **Bulletin of the Engineering Experiment Station** is the medium through which the results of investigations in engineering lines are published. Numbers are issued at irregular intervals, as material becomes available, usually two or three each year. It is under the direction of an Experiment Station staff. Communications should be addressed to the Director.

STATE SERVICE WORK.¹

Entomological Field Work. In conjunction with the State Agricultural College, the University conducts the field work of the State Entomological Commission.

Water Analysis. The University maintains laboratories for the chemical and bacteriological examination of water. The special purpose of this examination is to assist Kansas communities to secure and preserve safe supplies of water.

Ceramics and Kansas Clays. The University is engaged in the examination of the clays of the state and the determination of their fitness for the fine and useful arts.

State Chemical Research. This division of the Department of Chemistry is engaged in the study of chemical problems in which the industries or the communities of Kansas may be interested.

Food and Drug Analysis. By legislative enactment it is the duty of the University to examine samples of food and drugs for their purity, and report to the State Board of Health.

Weights and Measures. The University has in its custody the sets of standard weights and measures of the state; and the deputy state sealer, who is a member of the faculty, tests weights and measures in the enforcement of the laws governing commercial standards.

Engineering Experiment Station. Numerous investigations and experiments with Kansas building stone, brick and stone for paving, the purification of sewage, the properties of coal, natural gas, and oils, the calibration of metering appliances for municipal service, etc., have been conducted and the results published in a series of bulletins.

UNIVERSITY SURVEYS.¹

Biological Survey. A biological survey of the state is being conducted by the departments of Botany, Zoölogy, and Entomology. The results are made known in special reports and in the science bulletins of the University.

Geological Survey. The work of the geological survey is carried on through field expeditions sent out annually. The results thus far have been published in ten volumes, besides many bulletins.

Water Survey. A survey of the waters of the state is being made by the University in conjunction with the United States Geological Survey and the State Board of Health.

1. More detailed information will be found in Section XII.

HISTORY.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggle provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a State University, for the promotion of literature and the arts and sciences."

By an act of Congress approved January 29, 1861, the day on which Kansas was admitted to statehood, seventy-two sections of land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building now known as North College. The first faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but remained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art, established in 1877, were combined to form the School of Fine Arts. The Graduate School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was made independent as a School of Medicine, the first two years only being given. In 1905 the clinical departments were added at Rosedale, thus completing a four-year medical course. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences. The School of Education and the Division of University Extension were established in 1909.

The Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874 Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott,

who served until June, 1889, when Mr. W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. In 1890, Prof. Francis H. Snow, who had been a member of the faculty from the beginning, was elected. When, in 1901, Chancellor Snow resigned on account of failing health, Mr. Spangler again became acting Chancellor, serving until Dr. Frank Strong assumed the office August 1, 1902.

In 1913 the powers belonging to the Board of Regents passed by legislative act to the newly constituted State Board of Administration.

GOVERNMENT.

THE BOARD OF ADMINISTRATION.

The legislature of 1913 established the Board of Administration of Educational Institutions, with full power to administer the affairs of the University, as well as other state schools, subject only to legislative enactments. This board consists of three members to be appointed by the governor, not more than two of whom shall belong to one political party, and not more than one of whom shall be a graduate of any one of the institutions named. Not more than one member shall be from one congressional district. The term of office is four years. The board maintains a business office at each of the state educational institutions under its control, and also an office at the seat of government.

THE UNIVERSITY SENATE.

The University Senate consists of the Chancellor, the deans and directors of divisions, and all members of the instructional staff having the rank of professor or associate professor. The Senate has jurisdiction over all internal matters involving general University policy. The Chancellor is *ex officio* chairman and executive officer of the Senate.

THE FACULTIES.

The faculty of each school consists of the Chancellor, the Dean, and all professors, associate professors, assistant professors and instructors giving work in that school. It has jurisdiction over all matters which concern primarily its own school. The Chancellor is chairman of each faculty. The Dean of each school is its executive officer.

DEPARTMENTAL FACULTIES.

A departmental staff consists of all members of its instructional force. It has jurisdiction over all matters which concern primarily its own internal policy.

UNIVERSITY DIVISION COMMITTEES.

A University division is a body having relations with more than one of the schools or departments of the University. The divisions are administered by committees, subject to the general regulations of the Senate. Each division has an executive officer, called the Director.

EQUIPMENT.

PROPERTY AND INCOME.

The University owns equipment, buildings and grounds of an estimated value of \$2,000,000. It receives about \$52,000 yearly from fees and \$7200 from the land fund. For the biennium of 1915-1917 the state appropriated \$1,260,000.

THE CAMPUS.

The campus, comprising some 160 acres of hilltop and hill slope, has so far contrived to retain much of its natural beauty. The buildings follow the curve of the hill; the walks take the line of least resistance; the trees in North Hollow form a tangled mass much appreciated by birds and art students. There has been almost no conventional planting.

The campus of the Medical School at Rosedale also lies high and is capable of artistic development.

BUILDINGS.

There are twenty-three University buildings, of which sixteen were erected by the state and seven by private gift.

North College was erected in 1866, at a cost of \$20,000. This sum was given by citizens of Lawrence.

Fraser Hall was erected in 1872. Its total cost has been approximately \$182,000, of which one-half was appropriated by the legislature, the other contributed by the city of Lawrence. In this building are located the executive offices of the University, including the Chancellor's office and the office of the Registrar; the offices of the Dean of the College, the Alumni Secretary, the Adviser of Women, and the University Extension Division; the offices and recitation rooms of the Departments of English, German, Greek, Latin, Romance Languages and Home Economics, and the School of Education; also, the classical museum. The building is named in honor of Gen. John Fraser, the first active Chancellor of the University.

Medical Hall was erected in 1884, at a cost of \$12,000—\$8000 from interest on the permanent endowment fund of the University, and \$4000 appropriated by the legislature. The physiological laboratories are located on the second floor. The basement is occupied by the Department of Journalism.

Snow Hall was erected by the state in 1886, at a cost of \$50,000. In this building are located the laboratories and lecture rooms of the Departments of Bacteriology, Botany, Entomology, Zoölogy and Medical Physiology. The laboratories of the State Water Survey are located in the south side of the basement. The building is named in honor of Prof. Francis Huntington Snow.

The Heating Plant was erected by the state in 1887, at a cost of \$16,000, and after a fire in 1898 was rebuilt and equipped at a cost of \$30,000.

Spooner Library was erected in 1894, at a cost of \$75,000, through the generosity of William B. Spooner, of Boston. On the first or main floor are located the general reading room, a newspaper room, and the Librarian's and Cataloguer's offices.

The Chancellor's Residence was erected in 1894 at a cost of \$12,000, from the William B. Spooner bequest.

Blake Hall was erected by the state in 1895, at a cost of \$58,000. It is occupied by the Department of Physics and Astronomy. It is named in honor of Prof. Lucien Ira Blake.

Fowler Shops was completed in 1899, at a cost of \$21,000. It was given by Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted primarily to instruction in shop work.

The Chemistry and Pharmacy Building was completed in 1900, at a cost of \$70,000, appropriated by the legislature. The building is arranged specifically for laboratory purposes for the Departments of Chemistry and Pharmacy.

The Dyche Museum of Natural History, named in honor of Prof. Lewis L. Dyche, was erected by the state in 1902, at a cost of \$75,000. It houses collections in entomology, paleontology, mammals, and birds. Part of the basement is occupied by the Department of Anatomy.

Green Hall, named in honor of Dean James W. Green, was erected by the state in 1905, at a cost of \$65,000. It is occupied by the School of Law and the Department of Public Speaking.

The Robinson Auditorium-Gymnasium was erected by the state in 1905 at a cost of \$100,000. By removing the apparatus, the gymnasium may be transformed into an auditorium with a seating capacity of 3000. The building is named in honor of Charles Robinson, first governor of Kansas, and his wife, Mrs. Sara T. D. Robinson.

The Eleanor Taylor Bell Memorial Hospital. The first section of the Bell Memorial Hospital, at Rosedale, was erected in 1905 at a cost of \$30,000, on property and by funds given to the University for that purpose by Dr. Simeon B. Bell, of Rosedale, and was named in memory of his wife. In 1911 a second section was built through an appropriation by the legislature of \$50,000. The combined hospital has about seventy-six beds, and is used as a teaching hospital. To it are sent county patients under the indigent poor law, the crippled children law, and the obstetrical service law.

The Clinical Laboratory at Rosedale was erected in 1906, at a cost of \$40,000, on property and by funds furnished by Dr. Simeon B. Bell.

The Service Building, erected by the state in 1908, contains the office of the superintendent of buildings and grounds, and the workmen's shops.

Marvin Hall was erected by the state in 1907, at a cost of about \$90,000. It contains equipment and classrooms for the general work of the School of Engineering. This building is named in honor of Frank O. Marvin, first Dean of the School.

The Power Plant and Mechanical Laboratory was completed in 1909, at a cost of about \$23,000. In the power-plant section are power-gener-

ating machinery for lights and power for the University and the pumps for the regular water service and fire protection. The laboratory section contains equipment for instruction in technical engineering work.

Haworth Hall was erected by the state in 1909, at a cost of \$50,000. A \$7500 clay laboratory was added in 1911. This building is named in honor of Erasmus Haworth, professor of geology.

Liberal Arts Building. The east wing of the College of Liberal Arts and Sciences and Administration Building was erected in 1911 by the state, at a cost of \$125,000. It is occupied by the Departments of Economics, History and Political Science, Mathematics, Philosophy, and Sociology; the psychological laboratories occupy the basement, and the Department of Drawing and Painting the third floor.

The Dispensary Building at Rosedale was erected in 1915, at a cost of \$25,000 provided by the legislature.

Oread Training School was erected in 1915 at a cost of \$6000. This sum was largely a gift of the School.

The Vivarium was built in 1916 from the fund for permanent repairs and improvements.

UNIVERSITY ORGANIZATIONS.

GENERAL.

The Alumni Association is composed of all persons holding degrees granted by the University, though active membership is limited to those who pay annual dues. An endowment membership is maintained for those who subscribe to the endowment fund. An associate membership is for such former students of the University, not graduates, as pay the associate membership dues. Such former students may also become associate-endowment members. The control of the affairs of the association is in the hands of a board of ten directors. A general secretary is employed, whose office is at the University and who has charge of the publications of the association, and keeps, so far as possible, a complete record of facts concerning alumni. He is editor of the *Graduate Magazine*, which is sent monthly to all members of the association. The regular meetings of the association occur during commencement week of each year, at which time the annual alumni address is delivered at the University by some one from among the alumni.

University Women's Association. The University Women's Association is composed of the women connected with the University as instructors, librarians, or officials, and the wives of instructors. This organization gives a general reception at the opening of each academic year, maintains a scholarship for women, and in various other ways shows its practical interest in the affairs of the University.

RELIGIOUS.

Young Men's Christian Association. This organization has a membership of over five hundred. The various activities of the association are carried on by the members themselves, under a board of directors, and a general secretary whose entire time is devoted to the work.

In coöperation with the churches of Lawrence and the Christian and Presbyterian Bible chairs, the association offers a large number of Bible-study courses, under the leadership of University professors and advanced students. Courses in the study of missions are also given. The association is largely responsible for the support of its former general secretary, Mr. H. C. Herman, who is now engaged in association work in India.

Through the courtesy of the University Bible chair of the Christian Women's Board of Missions, the association occupies quarters in Myers Hall, where are held the meetings of the association.

The association welcomes students at the opening of the University, aiding them in finding suitable rooming and boarding places. The employment bureau, which is conducted jointly by the association and the University, renders all assistance possible to students desiring to earn

a part of their expenses. During the summer months the employment bureau makes a canvass of the student district for rooms, and its information as to rooms and board is most complete. The association issues a student's handbook, giving valuable information to prospective students, which is ready for distribution about September 1, and will be sent free upon request. Address all correspondence to the general secretary.

Young Women's Christian Association. This is an organization of 300 University women, with a permanent sustaining membership of over 100 faculty women and alumnae. The association employs a general secretary, who gives all her time to the direction and supervision of its work. The purpose of the association is fivefold: (1) to develop and deepen the spiritual and moral life of the young women of the University, and to bring to them the conception that no part of their life lies outside of their religion; (2) to be the medium between the women students of the University and the churches of Lawrence; (3) to give practical aid to women students whenever they are in need of it; (4) to be one of the agencies to create the best social standards; (5) to train young women to become efficient workers in church and philanthropic organizations.

Religious services are held weekly, on Wednesday afternoons, at 4:45, in Myers Hall. During the opening week of the fall term members of the association may be found ready to assist Freshmen girls in registering and finding classrooms and rooming and boarding places.

Information concerning rooming and boarding places and employment for girls may be obtained by applying to the general secretary.

The Christian Church Bible Chair. April 1, 1901, the Women's Board of Missions of the Christian Church established a chair of Biblical instruction. Myers Hall, erected at a cost of \$40,000, affords commodious lecture rooms and offices, an assembly room seating five hundred, a library and museum of missions.

There is no organic relation between the Bible chair and the University. The privileges are offered to all students, and the instruction is nonsectarian. The purpose of the work is to give students a more intimate acquaintance with the Bible, and to render them assistance in their religious life.

The courses include studies in both the Old and New Testaments, in the history of missions, and in the great religions of the world.

A library of 1500 volumes on Bible study, missions, religion, Christian sociology, the Sunday school, and related subjects, is accessible to all.

The present occupant of the chair is Arthur Braden, A. B. (Hiram College), graduate of Auburn, N. Y., Theological Seminary, Ph. D. (Syracuse University).

Westminster Association. In 1905 the Presbyterians of Kansas organized Westminster Association for the purpose of offering Biblical instruction to all students and affording pastoral care for Presbyterian students of the University. On October 7, 1910, Westminster Hall, the gift of W. W. Cockins, of Lawrence, was dedicated. The hall is well adapted to class work, and also affords a center for the social life of the students. In June, 1911, Rev. Stanton Olinger, B. D. (Princeton), Ph. D. (Kansas),

was elected principal. Mrs. Olinger is associated with him in the work of the hall.

The following courses are offered: A four-year course in Bible history; the Bible and Modern Science; the Lives and Doctrines of the Prophets; Pauline Theology; Missions and World Problems; Comparative Religions; the Sources of the Bible; and the Evidences of Christianity.

There is no organic connection with the University. The teaching is nonsectarian and without charge. All students are welcome to the social life of the hall.

All correspondence relative to the work of the Westminster Association should be addressed to the Principal.

City Churches. The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons from time to time, and the young people's societies arrange for social gatherings, to which students especially are invited. There are also organized, in the principal Sunday schools of the city, classes for University students, a number of these classes being in charge of University professors.

The First Baptist Church and the First Methodist Church have regularly appointed associate pastors, who give their main attention to the students of these denominations. Several other churches appoint students each year to act as assistants to the local pastors.

By these means the students are brought into close contact with the religious life of Lawrence. A religious census of the student body during the past few years shows that an average of eighty-seven per cent of the students have religious preferences, sixty-three per cent are church members, and that a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

LITERARY.

The Phi Beta Kappa Society. The Kansas Alpha chapter of this society was organized in 1890. The object of the society is, primarily, the promotion of scholarship in the University. To this end, a portion of the members of the graduating class of the College, never to exceed one-sixth, who have made high records of scholarship in their University studies, are elected to membership.

German Club. The membership of this club, which meets once a week, consists of such students as have made sufficient progress in German to take active part in the programs. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language, and to promote an interest in all that is German. Musical and literary programs, rendered by the students, alternate with talks or lectures by members of the faculty or outside speakers. The meetings are conducted exclusively in German. Each year a German play is given.

The Quill Club is the parent chapter of an intercollegiate organization of students and instructors especially interested in literary activities and literary criticism. It conducts a magazine and offers prizes, from time to time, for contributed material. Applicants for membership must submit manuscript for the approval of the club.

The English Club is composed of the instructors and advanced students in the Department of English and meets bimonthly.

French Club. The instructors and students in the French Department compose the Circle Français, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, given towards the close of each year.

The Greek Symposium consists of the instructors and students of the Greek Department, who meet once a month for the reading of papers and discussion of topics which are either too general or too special for class work. The meetings are held in the evening, at the home of one of the instructors, and the special program is followed by a social hour.

Spanish Club. The Ateneo has been formed on the same general lines as the French Club for those students who wish to acquire facility in the use of spoken Spanish. At its weekly meetings, besides programs of a literary character, news of the Spanish-speaking world is reported and discussed. The Spanish play gives further opportunity to acquire readiness in speaking.

SCIENTIFIC.

The Sigma Xi Society. The Iota chapter of this honorary scientific society was established at the University in 1890. The society confers the honor of election to membership upon instructors and students who have shown special aptitude along scientific lines, especially with regard to research work. This chapter holds monthly meetings for the reading and discussion of scientific papers, and is the center of scientific interests at the University.

The Chemical Club is composed of the instructors and advanced students in the Department of Chemistry, and Chemical Engineers. Weekly meetings are held, and the programs include reports on research work by instructors and students, reports on scientific meetings and associations, review of new books and important articles in chemical journals, and notices of important inventions and new chemical processes.

Civil Engineering Society. This is maintained by students, under the guidance of the instructors in the department. It holds monthly meetings and is frequently addressed by practicing engineers, besides maintaining a program of papers and discussions.

University of Kansas Branch of the American Institute of Electrical Engineers. This is composed of instructors and students who are associated members or student members of the national organization. It holds

biweekly meetings for the discussion of papers presented before the national meetings of the association, for the review of current literature, and for addresses by practicing engineers.

University of Kansas Student Section of the American Society of Mechanical Engineers. This is essentially a student organization, under the supervision of an instructor who is a member of the national society. Weekly meetings are held for reports on current engineering literature, with occasional addresses by practicing engineers.

Affiliated Students' Society of the American Institute of Mining Engineers. This is a society composed of Junior and Senior students and instructors in the department, which enjoys the advantage of association with the institute. Meetings are held monthly for the discussion of the publications of the institute and the presentation of papers. Weekly department meetings in Mining Journal supplement the work of the society.

The Botany Club is composed of instructors and students of the department of botany. It meets twice a month.

The Snow Zoology Club is composed of instructors and advanced students of the department. It meets twice a month for the study and discussion of questions of general interest to the members, the aim being more particularly to keep in touch with recent discoveries.

The Mathematical Club is an organization of advanced students of the Department of Mathematics, with one faculty member elected by them as their official adviser. It meets twice a month to discuss mathematical questions of general interest.

The Entomology Club is composed of instructors and advanced students of the Department of Entomology. The meetings are held weekly and are devoted to the presentation of researches conducted by the department and to current advances as presented through the entomological journals.

The Home Economics Club meets once a month. Its membership is elective.

The Geology Club is composed of mining students and such College students as specialize in geology. It meets once in two weeks. •

The Jurisprudence Club meets every three weeks for the discussion of general questions of current interests. Its membership is elective.

The Graduate Club meets once a month. Its interests are social, literary, and scientific. Its aim is to allow graduate students to become acquainted with each other and with each other's work.

The Pharmaceutical Society holds bimonthly meetings for the study of subjects especially related to the art of pharmacy, and for friendly intercourse. Its membership is drawn from students, faculty, and alumni of the School of Pharmacy.

DEBATING.

Debating Council. The Debating Council is made up of six members of the faculty, appointed by the Chancellor of the University, and two representatives from each of the two debating societies and the honorary debating fraternity. The Council has general supervision over all preliminary and interstate debates.

DRAMATIC.

Dramatic Club. The students of the University maintain a dramatic club for the study and presentation of modern plays. Membership in the club is open to all students and is secured by dramatic trials held at stated intervals.

MUSICAL.

Orchestra. The University supports an orchestra of forty instruments, under the direction of one of the faculty of the School of Fine Arts. The Orchestra makes a study of the orchestral masterpieces, furnishes music for University events, and gives two concerts annually.

Women's Glee Club. The Women's Glee Club is under the direction of the head of the Department of Voice Training. Membership is competitive. An annual concert is given.

Men's Glee Club. The Men's Glee Club is under the direction of the head of the Department of Voice Training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Senate.

Band. The University Band is a permanent organization, fully uniformed, and directed by a professional leader. The band furnishes music for the more important University gatherings and gives several concerts annually.

UNIVERSITY MEETINGS.

Convocation. At the opening of the fall semester, and occasionally during the year, convocations of the faculty and student body are held. At these gatherings speakers, either from the faculty or from abroad, discuss topics of general interest. The purpose of these meetings is to bring together all members of the University for instruction as well as for the development of a common spirit.

Morning Prayers. Devotional exercises are held in the University chapel every morning at eight o'clock. These exercises are in charge of members of the faculty or clergymen invited for the purpose, each leader serving for a week. They consist of responsive reading, prayer, singing, and a short address. They close at 8:20, in time for the first class hour at 8:30.

Vesper Services. Religious exercises are held occasionally at 4:30 Sunday afternoons. They are in charge of the Y. M. C. A. and the Y. W. C. A. The service is largely musical, though an address is often given.

GENERAL INFORMATION.

ADMISSION.

The requirements for admission of graduates of Kansas high schools to the various schools of the University have been fixed by legislative enactment, which, by section 9, senate bill No. 66, session of 1915, provides that:

"Any person who shall complete a four-year course of study in any high school accredited by the State Board of Education shall be entitled to admission to the Freshman class of the State University, the State Agricultural College, or any of the State Normal Schools, on presenting a statement containing a transcript of his high-school record, signed by the principal of the school, and certifying that such person has satisfactorily completed said course of study."

For the guidance of prospective students who do not come under the provisions of the law, and who desire to prepare themselves for admission to any of the schools of the University, statements of entrance requirements will be found in the special catalogs of those schools.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in subjects required for admission.

Examinations for such candidates will be held as follows:

Wednesday, May 31, or Monday, September 11.

- 8-10 English.
- 10-12 Algebra.
- 1- 3 French.
- 3- 5 Geometry.

Thursday, June 1, or Tuesday, September 12.

- 8-10 Physical Geography.
- 10-12 Economics.
- 1- 3 German.
- 3- 5 History.

Friday, June 2, or Wednesday, September 13.

- 8-10 Latin.
- 10-12 Physics.
- 1- 3 Botany.
- 3- 5 Greek.

Saturday, June 3, or Thursday, September 14.

- 8-10 Chemistry.
- 10-12 Free-hand Drawing.
- 1- 3 Psychology.
- 3- 5 Physiology.

Times for examinations in subjects not given in the above list may be arranged with the Committee on Examinations, but will be set during the above days.

Entrance examinations may be taken also during the week of midyear examinations.

Candidates for admission may divide the examination between two years, or between the two examinations of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and if he is successful in five or more subjects he need not be again examined in them.

Admission of Special Students.

Special students are admitted to the various schools of the University upon conditions prescribed by the faculties.

Admission to Advanced Standing.

The regulations governing admission to advanced standing in the schools of the University are administered by a committee of the University Senate, which examines into the merits of each case presented to it, and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

Application for such advanced standing must be made at the time of matriculation.

Undergraduates from other institutions must present certificates of honorable dismissal, or other satisfactory evidence of good character.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 11, 12, 13, 1916. Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean of the school to which they desire admission for enrollment in their classes. Enrollment the first semester occurs September 12, 13, 1916, and on the first day of the second semester. Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

EXAMINATIONS AND REPORTS.

Final Examinations are held for all students during the last week of each semester.

Special Examinations will be given only during examination weeks and during the opening week of the fall semester. All requests for special examinations must be approved by the Dean.

Dismissal. Absence from examination or failure in more than one-third of his work in any one semester severs a student's connection with the University.

Whenever a student is failing in part of his work the Dean may, at his discretion, withdraw him from one or more of the classes in which he is failing and give him a failure in such subjects.

Not Examined. A student who fails to appear for final examination, but whose class standing has been of passing grade, will be reported as "not examined." If his class standing is below passing he will be reported as "failed."

Grade One is used to indicate that the work of the student has been excellent in quality and performed with marked fidelity and decided interest.

Grade Two is used to indicate that the work of the student has been good and his application reasonable.

Grade Three is used to indicate that the work of the student has been fair and that his attainments are at least sufficient to prepare him to pursue the succeeding subjects in the department or subjects in other departments in any way dependent upon the subject graded.

Conditions. A student may be conditioned in a subject if the quality of his work has been of passing grade and some portion of the work is for good reason unfinished. A condition may be made good under the direction of the instructor and removed by special examination, but unless properly removed before the beginning of the same semester of the following year the condition becomes a failure and the student must reënroll for the subject.

Failures. Any student who has not met the requirements for at least a grade three or "condition" must be marked as "not examined" or "failed." A failure may be removed only by reënrollment in the subject.

Inadequate Preparation. When students show by their current work insufficient entrance preparation in any study they may be required to make good such deficiency in any manner prescribed by their instructors.

Fees.

Students are required to pay fees as scheduled below. In all cases, the matriculation fee is paid but once—at the time the student first registers in any school of the University. The incidental fee is payable in full each year at registration.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Incidental fee, for residents of the state | 10.00 |
| for nonresidents | 20.00 |
| Diploma fee, at graduation | 5.00 |

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Incidental fee, for residents of the state | 10.00 |
| for nonresidents | 20.00 |
| Diploma fee, at graduation | 5.00 |

SCHOOL OF LAW.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Incidental fee, for residents of the state | 25.00 |
| for nonresidents | 35.00 |
| Diploma fee, at graduation | 5.00 |

SCHOOL OF PHARMACY.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Incidental fee, for residents of the state | 25.00 |
| for nonresidents | 35.00 |
| Diploma fee, at graduation | 5.00 |

Students taking the regular four years in pharmacy are registered during the first two years in both the School of Pharmacy and the College of Liberal Arts and Sciences, and may pay the College incidental fee so long as their work is confined to courses offered in the College.

SCHOOL OF MEDICINE.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Incidental fee, for residents of the state | 25.00 |
| for nonresidents | 35.00 |
| Diploma fee, at graduation | 5.00 |

(For special fees for clinical work, see section VIII.)

During the first year of the regular four years in medicine students are registered in both the School of Medicine and the College of Liberal Arts and Sciences, and will pay the College incidental fee. During the succeeding years they will pay the incidental fee of the School of Medicine.

SCHOOL OF FINE ARTS.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Diploma fee, at graduation | 5.00 |

(Special fees for fine arts students are given in detail in section V, School of Fine Arts.)

GRADUATE SCHOOL.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 20.00 |
| Incidental fee, for residents of the state | 10.00 |
| for nonresidents | 20.00 |
| Diploma fee, for each degree | 5.00 |

SUMMER SESSION.

| | |
|--|---------|
| Incidental fee, for residents of the state | \$10.00 |
| for nonresidents | 15.00 |

SCHOOL OF EDUCATION.

| | |
|---|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents | 10.00 |
| Incidental fee, for residents of the state | 10.00 |
| for nonresidents | 20.00 |
| Diploma fee, at graduation | 5.00 |

CORRESPONDENCE DEPARTMENT.

| | |
|--|---------|
| Incidental fee, for residents of the state, any school ... | \$10.00 |
| for nonresidents of the state, any school, | 15.00 |

A fee of \$1 per semester is required of each student to cover the expense of maintaining the general health of the University body.

Late registration and late enrollment in class also require a fee of \$1.

Announcements of laboratory and shop fees will be found under such courses as require them.

Living Expenses.

Information concerning the location of rooming and boarding places may be had at the office of the Registrar, or from the Secretary of the University Y. M. C. A.

The average price of board, rooms, light, and fuel may be placed at from \$4 to \$7 a week. Day board in private families and at city restaurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table can lessen expenses materially.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the student:

| | |
|------------------------------------|----------------------|
| Board | \$120.00 to \$160.00 |
| Room | 20.00 to 60.00 |
| Books and stationery | 8.00 to 40.00 |
| Laundry | 8.00 to 30.00 |
| Matriculation and other fees | 15.00 to 30.00 |
| Incidentals | 15.00 to 50.00 |
| Totals | \$186.00 to \$370.00 |

The estimated expenses for students in the Medical, Law, and Pharmacy schools of the University are included in the second table because of the higher incidental fee.

PRIZES AND AIDS.

The William J. Bryan Prize is derived from the income of \$250 which was presented to the University by Mr. Bryan in 1898, upon the condition that the proceeds should be used for "a prize for the best essay discussing the principles which underlie our form of government." The prize is offered in alternate years. The details of the contest are intrusted by the faculty of the College to a special committee.

The Hattie Elizabeth Lewis Memorial Prizes were established in 1911, in memory of Hattie Elizabeth Lewis, a former student of the University. They are open to all students of the University, and have since 1911 been given annually for the best essays on some phase of the general theme, "The Application of the Teachings of Jesus to the Practical Affairs and Relations of Life." They have amounted to \$250 annually.

University Fellowships to the number of seventeen have been established for graduates of the University of Kansas and of other recognized colleges and universities who have distinguished themselves for scholarship. These fellowships are of \$280 each.

University Fellowships for Graduates of Kansas Colleges, ten in number, are offered yearly. These fellowships also amount to \$280 each, and one is offered to each of ten Kansas colleges chosen from year to year by the administrative committee of the Graduate School.

The Charles S. Griffin Memorial Scholarship was established in 1910 by Mrs. Mary Griffin, in memory of her son. The interest on \$1000 is awarded annually to a student of the College. Held 1915-'16 by George Lynam.

The Marcella Howland Memorial Scholarship of ninety dollars was established in 1900, by Mrs. Marcia Brown Howland, in memory of her daughter. It is open to young women of Junior and Senior classes in the College. Held in 1915-'16 by Miss Zora Kennedy.

The Frances Schlegel Carruth Scholarship in German was established in 1909, in memory of Frances Schlegel Carruth. It is a Freshman scholarship of one hundred dollars, awarded to the graduate of the Lawrence high school who passes the best examination in two years' entrance German. Held in 1915-'16 by Maria Deibel.

The Women's Student Government Association Scholarship of one hundred dollars, was established in 1910. It is open to young women of the Freshman class for use in the Sophomore year. Held in 1915-'16 by Miss Frederica Johnson.

The University Women's Association Scholarship of one hundred dollars, was established in 1915. Held in 1915-'16 by Miss Bertha Eichenauer.

The Eliza Matheson Innes Memorial Scholarship of one hundred dollars, was established in 1911, by Mr. George Innes, in honor of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1915-'16 by Miss Frances Adams.

The Caroline Mumford Winston Memorial Scholarship of thirty-five dollars, was established in 1912, by Mr. Thomas Winston, in memory of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1915-'16 by Miss Emily Miller.

The Kansas Branch of the Association of Collegiate Alumnae established a scholarship of fifty dollars in 1912. It is open to women students of the College above the Freshman year, or women students of the Graduate School. Held in 1915-'16 by Miss Margaret Husson.

The Kansas City Branch of the Association of Collegiate Alumnae established in 1914 two scholarships. These are loans of seventy-five dollars each for five years without interest. Open to Junior or Senior women students from Kansas City, Kansas or Missouri. Held in 1915-'16 by Miss Lella Glayd Saunders and Miss Mina Upton.

The Lucinda Smith Buchan Memorial Scholarship was established in 1900 in memory of Lucinda Smith, A. B., 1890, by the alumnae members of the Pi Beta Phi Sorority. It is a loan of two hundred dollars for two years without interest, open to the young women of the Junior and Senior classes in the College. Held in 1915-'16 by Miss Virgil Gordon.

The Daughters of the American Revolution Scholarship was established in 1912 by the Betty Washington Chapter of the Daughters of the American Revolution. It is a loan of one hundred dollars without interest for three years after graduation, and open to young women of the Senior classes. Held in 1915-'16 by Miss Cecil Grimes.

The Student Loan Fund was established in July, 1894, by the graduating classes in College and Engineering of that year. It has increased through donations from subsequent classes and from private individuals until it amounts to over \$1500. By the terms of the gift sums not to exceed \$100 may be loaned on bankable notes at four per cent interest to students of the College and School of Engineering.

An Aid Fund has been established for the assistance of worthy women students.

Employment. The University, through the Young Men's and the Young Women's Christian Associations, maintains an employment bureau. The secretaries of these associations may be addressed by students desiring employment.

ROOMING HOUSES.

Approved Rooming Houses for Men. Lists may be had from the Registrar, or the Secretary of the University Y. M. C. A., on application.

Approved Rooming Houses for Women. The University attempts to secure the best housing conditions available for its women students, through a committee under whose direction a list of rooming houses for women is prepared each year. The sanitary and social conditions of each house are investigated before it is placed on the approved list. Students are expected to room only in houses that are on this list. This list, together with regulations governing rooming places, may be had from the Registrar from July 1 to September 10, and thereafter from the Adviser of Women. By action of the Board of Administration, occupancy of rooms by women students shall be subject at all times to the approval of the Adviser of Women; further, women students are not permitted to lodge in houses in which men also lodge, unless for special reasons the rule is waived by the Adviser. The University expects students to keep their rooms for at least one semester or to make changes only on recommendation of the Adviser.

House Customs. The following customs have been adopted by the women of the University as organized in the Women's Student Government Association:

I. Rooming houses for women should be closed not later than 10:00 p. m. every night in the week, except when entertainments of general interest are held, and on Friday and Saturday nights, when the closing hour is 11:00.

II. Students' parties should be held only on Friday or Saturday nights, or on nights preceding holidays, and on holidays.

III. Social engagements should not be made for the evenings of school days, except for Friday evenings, or for evenings preceding holidays, and on holidays.

Mrs. Eustace H. Brown, Adviser of Women of the University, exercises general supervision over all houses where women live, and gives general and individual attention to the needs of women students. She invites correspondence with parents and guardians, and gladly coöperates with them regarding the welfare of women students.

STUDENT HEALTH.

The University Health Service is organized for the purpose of teaching the students the importance of maintaining health and of living in sanitary surroundings. To accomplish this work a committee composed of five faculty members conducts the operations of the service along the lines of education, sanitation, and personal supervision.

The educational work is conducted by means of lectures concerning both personal hygiene and sanitation, which are delivered by experts on the various phases of these subjects.

Sanitation is maintained by a carefully worked out plan of examination, inspection, and supervision.

The University Hospital is maintained by a fee of two dollars yearly from each student. To assist in the work of the hospital there are two auxiliary dispensaries in the gymnasium. There is also an isolation hospital where all dangerously transmittable diseases are taken. Difficult or dangerous operations are taken to the Rosedale hospital.

INDEX.

| | <i>page</i> | | <i>page</i> |
|--|-------------|---------------------------------|-------------|
| Administration, Officers of..... | 6 | Instructors | 21 |
| Administration, State Board of..... | 3 | Assistant Instructors | 25 |
| Admission, Requirements of..... | 45 | Organizations, University | 39 |
| Advanced Standing, Admission to.... | 46 | General | 39 |
| Bible Chair of Christian Church..... | 40 | Religious | 39 |
| Buildings | 36 | Literary | 41 |
| Calendar, University | 4 | Scientific | 42 |
| Campus, The | 36 | Debating | 44 |
| Christian Associations | 39 | Dramatic | 44 |
| Chronological Table | 5 | Musical | 44 |
| Churches, Relation of University to... | 41 | Prizes | 49 |
| Deans of Schools, List of..... | 6 | Publications | 32 |
| Divisions of University..... | 30 | Religious Organizations | 39 |
| Summer Session | 30 | Rooming Houses | 51 |
| Extension | 31 | Scholarships | 50 |
| Athletics | 31 | Schools of University..... | 27 |
| Libraries | 31 | Graduate | 27 |
| Museums | 32 | The College | 28 |
| Publications | 32 | Engineering | 28 |
| State Service Work..... | 33 | Fine Arts | 29 |
| Surveys | 33 | Law | 29 |
| Examinations, Entrance | 45 | Pharmacy | 29 |
| Expenses | 47 | Medicine | 30 |
| Extension Work | 31 | Education | 30 |
| Fees | 47 | Special Students | 46 |
| Health, Student | 52 | Student Health | 52 |
| Information, General | 45 | University, The | 27 |
| Instruction, Officers of..... | 9 | Schools of | 27 |
| Libraries | 31 | Divisions of | 30 |
| Museums | 32 | History of | 34 |
| Officers of Administration..... | 6 | Government of | 35 |
| Officers of Instruction..... | 9 | Equipment of | 36 |
| Professors | 9 | University Calendar | 4 |
| Associate Professors | 15 | University Organizations | 39 |
| Assistant Professors | 18 | Westminster Association | 40 |



A fee of \$1 per semester is required of each student to cover the expense of maintaining the general health of the University body.

Late registration and late enrollment in class also require a fee of \$1.

Announcements of laboratory and shop fees will be found under such courses as require them.

Living Expenses.

Information concerning the location of rooming and boarding places may be had at the office of the Registrar, or from the Secretary of the University Y. M. C. A.

The average price of board, rooms, light, and fuel may be placed at from \$4 to \$7 a week. Day board in private families and at city restaurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table can lessen expenses materially.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the student:

| | |
|------------------------------------|----------------------|
| Board | \$120.00 to \$160.00 |
| Room | 20.00 to 60.00 |
| Books and stationery | 8.00 to 40.00 |
| Laundry | 8.00 to 30.00 |
| Matriculation and other fees | 15.00 to 30.00 |
| Incidentals | 15.00 to 50.00 |
| Totals | \$186.00 to \$370.00 |

The estimated expenses for students in the Medical, Law, and Pharmacy schools of the University are included in the second table because of the higher incidental fee.

PRIZES AND AIDS.

The William J. Bryan Prize is derived from the income of \$250 which was presented to the University by Mr. Bryan in 1898, upon the condition that the proceeds should be used for "a prize for the best essay discussing the principles which underlie our form of government." The prize is offered in alternate years. The details of the contest are intrusted by the faculty of the College to a special committee.

The Hattie Elizabeth Lewis Memorial Prizes were established in 1911, in memory of Hattie Elizabeth Lewis, a former student of the University. They are open to all students of the University, and have since 1911 been given annually for the best essays on some phase of the general theme, "The Application of the Teachings of Jesus to the Practical Affairs and Relations of Life." They have amounted to \$250 annually.

University Fellowships to the number of seventeen have been established for graduates of the University of Kansas and of other recognized colleges and universities who have distinguished themselves for scholarship. These fellowships are of \$280 each.

University Fellowships for Graduates of Kansas Colleges, ten in number, are offered yearly. These fellowships also amount to \$280 each, and one is offered to each of ten Kansas colleges chosen from year to year by the administrative committee of the Graduate School.

The Charles S. Griffin Memorial Scholarship was established in 1910 by Mrs. Mary Griffin, in memory of her son. The interest on \$1000 is awarded annually to a student of the College. Held 1915-'16 by George Lynam.

The Marcella Howland Memorial Scholarship of ninety dollars was established in 1900, by Mrs. Marcia Brown Howland, in memory of her daughter. It is open to young women of Junior and Senior classes in the College. Held in 1915-'16 by Miss Zora Kennedy.

The Frances Schlegel Carruth Scholarship in German was established in 1909, in memory of Frances Schlegel Carruth. It is a Freshman scholarship of one hundred dollars, awarded to the graduate of the Lawrence high school who passes the best examination in two years' entrance German. Held in 1915-'16 by Maria Deibel.

The Women's Student Government Association Scholarship of one hundred dollars, was established in 1910. It is open to young women of the Freshman class for use in the Sophomore year. Held in 1915-'16 by Miss Frederica Johnson.

The University Women's Association Scholarship of one hundred dollars, was established in 1915. Held in 1915-'16 by Miss Bertha Eichenauer.

The Eliza Matheson Innes Memorial Scholarship of one hundred dollars, was established in 1911, by Mr. George Innes, in honor of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1915-'16 by Miss Frances Adams.

The Caroline Mumford Winston Memorial Scholarship of thirty-five dollars, was established in 1912, by Mr. Thomas Winston, in memory of his wife. It is open to women students of the College above the Freshman year, or to women students of the Graduate School. Held in 1915-'16 by Miss Emily Miller.

The Kansas Branch of the Association of Collegiate Alumnae established a scholarship of fifty dollars in 1912. It is open to women students of the College above the Freshman year, or women students of the Graduate School. Held in 1915-'16 by Miss Margäret Husson.

The Kansas City Branch of the Association of Collegiate Alumnae established in 1914 two scholarships. These are loans of seventy-five dollars each for five years without interest. Open to Junior or Senior women students from Kansas City, Kansas or Missouri. Held in 1915-'16 by Miss Lella Glayd Saunders and Miss Mina Upton.

The Lucinda Smith Buchan Memorial Scholarship was established in 1900 in memory of Lucinda Smith, A. B., 1890, by the alumnae members of the Pi Beta Phi Sorority. It is a loan of two hundred dollars for two years without interest, open to the young women of the Junior and Senior classes in the College. Held in 1915-'16 by Miss Virgil Gordon.

The Daughters of the American Revolution Scholarship was established in 1912 by the Betty Washington Chapter of the Daughters of the American Revolution. It is a loan of one hundred dollars without interest for three years after graduation, and open to young women of the Senior classes. Held in 1915-'16 by Miss Cecil Grimes.

The Student Loan Fund was established in July, 1894, by the graduating classes in College and Engineering of that year. It has increased through donations from subsequent classes and from private individuals until it amounts to over \$1500. By the terms of the gift sums not to exceed \$100 may be loaned on bankable notes at four per cent interest to students of the College and School of Engineering.

An Aid Fund has been established for the assistance of worthy women students.

Employment. The University, through the Young Men's and the Young Women's Christian Associations, maintains an employment bureau. The secretaries of these associations may be addressed by students desiring employment.

ROOMING HOUSES.

Approved Rooming Houses for Men. Lists may be had from the Registrar, or the Secretary of the University Y. M. C. A., on application.

Approved Rooming Houses for Women. The University attempts to secure the best housing conditions available for its women students, through a committee under whose direction a list of rooming houses for women is prepared each year. The sanitary and social conditions of each house are investigated before it is placed on the approved list. Students are expected to room only in houses that are on this list. This list, together with regulations governing rooming places, may be had from the Registrar from July 1 to September 10, and thereafter from the Adviser of Women. By action of the Board of Administration, occupancy of rooms by women students shall be subject at all times to the approval of the Adviser of Women; further, women students are not permitted to lodge in houses in which men also lodge, unless for special reasons the rule is waived by the Adviser. The University expects students to keep their rooms for at least one semester or to make changes only on recommendation of the Adviser.

House Customs. The following customs have been adopted by the women of the University as organized in the Women's Student Government Association:

I. Rooming houses for women should be closed not later than 10:00 p. m. every night in the week, except when entertainments of general interest are held, and on Friday and Saturday nights, when the closing hour is 11:00.

II. Students' parties should be held only on Friday or Saturday nights, or on nights preceding holidays, and on holidays.

III. Social engagements should not be made for the evenings of school days, except for Friday evenings, or for evenings preceding holidays, and on holidays.

Mrs. Eustace H. Brown, Adviser of Women of the University, exercises general supervision over all houses where women live, and gives general and individual attention to the needs of women students. She invites correspondence with parents and guardians, and gladly coöperates with them regarding the welfare of women students.

STUDENT HEALTH.

The University Health Service is organized for the purpose of teaching the students the importance of maintaining health and of living in sanitary surroundings. To accomplish this work a committee composed of five faculty members conducts the operations of the service along the lines of education, sanitation, and personal supervision.

The educational work is conducted by means of lectures concerning both personal hygiene and sanitation, which are delivered by experts on the various phases of these subjects.

Sanitation is maintained by a carefully worked out plan of examination, inspection, and supervision.

The University Hospital is maintained by a fee of two dollars yearly from each student. To assist in the work of the hospital there are two auxiliary dispensaries in the gymnasium. There is also an isolation hospital where all dangerously transmittable diseases are taken. Difficult or dangerous operations are taken to the Rosedale hospital.

INDEX.

| | <i>page</i> | | <i>page</i> |
|--|-------------|---------------------------------|-------------|
| Administration, Officers of..... | 6 | Instructors | 21 |
| Administration, State Board of..... | 3 | Assistant Instructors | 25 |
| Admission, Requirements of..... | 45 | Organizations, University | 39 |
| Advanced Standing, Admission to..... | 46 | General | 39 |
| Bible Chair of Christian Church..... | 40 | Religious | 39 |
| Buildings | 36 | Literary | 41 |
| Calendar, University | 4 | Scientific | 42 |
| Campus, The | 36 | Debating | 44 |
| Christian Associations | 39 | Dramatic | 44 |
| Chronological Table | 5 | Musical | 44 |
| Churches, Relation of University to..... | 41 | Prizes | 49 |
| Deans of Schools, List of..... | 6 | Publications | 32 |
| Divisions of University..... | 30 | Religious Organizations | 39 |
| Summer Session | 30 | Rooming Houses | 51 |
| Extension | 31 | Scholarships | 50 |
| Athletics | 31 | Schools of University..... | 27 |
| Libraries | 31 | Graduate | 27 |
| Museums | 32 | The College | 28 |
| Publications | 32 | Engineering | 28 |
| State Service Work..... | 33 | Fine Arts | 29 |
| Surveys | 33 | Law | 29 |
| Examinations, Entrance | 45 | Pharmacy | 29 |
| Expenses | 47 | Medicine | 30 |
| Extension Work | 31 | Education | 30 |
| Fees | 47 | Special Students | 46 |
| Health, Student | 52 | Student Health | 52 |
| Information, General | 45 | University, The | 27 |
| Instruction, Officers of..... | 9 | Schools of | 27 |
| Libraries | 31 | Divisions of | 30 |
| Museums | 32 | History of | 34 |
| Officers of Administration..... | 6 | Government of | 35 |
| Officers of Instruction..... | 9 | Equipment of | 36 |
| Professors | 9 | University Calendar | 4 |
| Associate Professors | 15 | University Organizations | 39 |
| Assistant Professors | 18 | Westminster Association | 40 |



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION II
GRADUATE SCHOOL**

STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Cherokee.

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculty.

FRANK WILSON BLACKMAR, Ph. D., Dean of the Graduate School, and Professor of Sociology.

JAMES WOODS GREEN, A. M., Professor of Law.

EDGAR HENRY SUMMERFIELD BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER MARTIN WILCOX,* Ph. D., Professor of Greek Language and Literature.

LUCIUS ELMER SAYRE, Ph. M., Professor of Pharmacy.

CHARLES GRAHAM DUNLAP, Litt. D., Professor of English Literature.

CARL ADOLPH PREYER, Mus. D., Professor of Piano and Composition.

OLIN TEMPLIN, A. M., Professor of Philosophy.

EDWIN MORTIMER HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK HEYWOOD HODDER, Ph. M., Professor of American History and Political Science.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

ARTHUR TAPPAN WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM CHASE STEVENS, M. S., Professor of Botany.

ARVIN SOLOMON OLIN, LL. D., Professor of Education.

WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

WILLIAM LIVESAY BURDICK, Ph. D., Professor of Law.

CHARLES SANFORD SKILTON, A. B., Professor of Organ, Theory of Music, and Music History.

IDA HENRIETTA HYDE, Ph. D., Professor of Physiology.

WILLIAM HAMILTON JOHNSON, A. M., Professor of Education.

SAMUEL JOHN HUNTER, A. M., Professor of Entomology.

WILLIAM EDWARD HIGGINS, LL. B., Professor of Law.

PERLEY F. WALKER, M. M. E., Professor of Mechanical Engineering.

MERVIN TUBMAN SUDLER, M. D., Professor of Surgery.

CARL LOTUS BECKER, Ph. D., Professor of European History.

L. D. HAVENHILL, Ph. M., Professor of Pharmacy.

FREDERICK EDWARD KESTER, Ph. D., Professor of Physics.

GEORGE CARL SHAAD, E. E., Professor of Electrical Engineering.

* On leave of absence, 1915-'16.

- HAMILTON PERKINS CADY, Ph. D., Professor of Chemistry.
MERLE THORPE, A. B., Professor of Journalism.
HARRY ALVIN MILLIS, Ph. D., Professor of Economics.
JOHN SUNDWALL, M. D., Professor of Anatomy.
FREDERICK HORATIO BILLINGS, Ph. D., Professor of Bacteriology.
HERBERT ALLEN RICE, C. E., Professor of Mechanics and Structural Engineering.
BENNET MILLS ALLEN, Ph. D., Professor of Zoölogy.
EDMUND HOWARD HOLLANDS, Ph. D., Professor of Philosophy.
HENRY WILBUR HUMBLE, J. D., Professor of Law.
EDWARD DELAHAY OSBORN, Professor of Law.
SAMUEL ALEXANDER MATHEWS, M. D., Professor of Physiology and Experimental Pharmacology.
FRANK BURNETT DAINS, Ph. D., Professor of Chemistry.
CLEMENT C. WILLIAMS, C. E., Professor of Railway Engineering.
ELMER FRANKLIN ENGEL, A. M., Professor of German.
JOHN NICHOLAS VAN DER VRIES, Ph. D., Professor of Mathematics.
RALPH H. MAJOR, M. D., Professor of Bacteriology and Pathology.
W. B. DOWNING, Professor of Voice and Public School Music.
ELIZABETH CADE SPRAGUE, Professor of Home Economics.
ROBERT MORRIS OGDEN, Ph. D., Professor of Psychology.
RAPHAEL DORMAN O'LEARY, A. B., Professor of Rhetoric.
RAYMOND ALFRED SCHWEGLER, A. M., Professor of Education.
ARTHUR JEROME BOYNTON, A. M., Professor of Economics.
CHARLES HAMILTON ASHTON, Ph. D., Professor of Mathematics.
ARTHUR C. TERRILL, A. M., Professor of Mining.
HAROLD L. BUTLER, A. B., Professor of Voice.
ARTHUR NEVIN, Professor of Ensemble and Music Extension.
H. C. THURNAU, Ph. D., Professor of German.
F. J. KELLY, Ph. D., Professor of Education.
RAYMOND A. KENT,* A. M., Professor of Education.
MILES WILSON STERLING, A. M., Associate Professor of Greek.
HANNAH OLIVER, A. M., Associate Professor of Latin.
SELDEN LINCOLN WHITCOMB, A. M., Associate Professor of English Literature.
MARTIN EVERETT RICE, M. S., Associate Professor of Physics.
DAVID LESLIE PATTERSON, B. S., Associate Professor of European History.
LOUIS EUGENE SISSON, A. M., Associate Professor of Rhetoric.
CLARENCE ADDISON DYKSTRA, A. B., Associate Professor of History.
ALBERTA LINTON CORBIN, Ph. D., Associate Professor of German.
WILLIAM ASBURY WHITAKER, A. M., Associate Professor of Metallurgy.
-

* Beginning September, 1916.

- WILLIAM JACOB BAUMGARTNER, A. M., Associate Professor of Zoölogy.
HENRY OTTO KRUSE, A. M., Associate Professor of German.
LEON NELSON FLINT, A. B., Associate Professor of Journalism.
CLARENCE CORY CRAWFORD, Ph. D., Associate Professor of History.
EARL WALTER MURRAY, A. B., Associate Professor of Latin.
WILLIAM SAVAGE JOHNSTON,* Ph. D., Associate Professor of English Literature.
WILLIAM HENRY TWENHOFEL, Ph. D., Associate Professor of Geology.
VICTOR E. HELLEBERG, A. B., Associate Professor of Sociology.
FREDERICK HUBBARD SIBLEY, M. E., Associate Professor of Mechanical Engineering.
CHARLES ARTHUR HASKINS, B. S., Associate Professor of Sanitary Engineering.
DEWITT CLINTON CROISSANT,* Ph. D., Associate Professor of English.
GEORGE ELLET COGHILL, Ph. D., Associate Professor of Anatomy.
MARGARET LYNN, A. M., Associate Professor of English Literature.
ELISE NEUENSCHWANDER, Ph. D., Associate Professor of Romance Languages.
ARTHUR LESLIE OWEN, A. M., Associate Professor of Romance Languages.
HERMAN CAMP ALLEN, A. M., Associate Professor of Chemistry.
WILLIAM WATSON DAVIS, Ph. D., Associate Professor of American History.
CLARENCE ANTHONY JOHNSON, E. E., Associate Professor of Electrical Engineering.
CARL FERDINAND NELSON, Ph. D., Associate Professor of Physiological Chemistry.
CHARLES ALBERT SHULL, Ph. D., Associate Professor of Botany.
ULYSSES GRANT MITCHELL, Ph. D., Associate Professor of Mathematics.
ALFRED HIGGINS SLUSS, B. S., Associate Professor of Mechanical Engineering.
EDWIN FISKE STIMPSON, B. S., Assistant Professor of Physics.
JAMES EDWARD TODD, A. M., Assistant Professor of Geology and Mineralogy.
ALBERT MOREY STURTEVANT, Ph. D., Assistant Professor of German.
LULU GARDNER, A. B., Assistant Professor of Rhetoric.
CLIFFORD CAUDY YOUNG, A. B., Assistant Professor of Chemistry.
ARTHUR MITCHELL, Ph. D., Assistant Professor of Philosophy.
FREDERICK A. J. COWPER, A. M., Assistant Professor of Romance Languages.
GEORGE ELLSWORTH PUTNAM, B. Litt., Assistant Professor of Economics.
WILLIAM REES B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
NOBLE PIERCE SHERWOOD, A. M., Assistant Professor of Bacteriology.
THEODORE TOWNSEND SMITH, A. M., Assistant Professor of Physics.

* On leave of absence, 1915-'16.

FLOYD CARLTON DOCKERAY, Ph. D., Assistant Professor of Psychology.
 HERBERT BARKER HUNGERFORD, A. M., Assistant Professor of Entomology.
 PAUL VANCE FARAGHER, Ph. D., Assistant Professor of Chemistry.
 EDMUND DRESSER CRESSMAN, Ph. D., Assistant Professor of Latin.
 MARK SKIDMORE, A. M., Assistant Professor of Romance Languages.
 RALPH EMERSON CARTER, A. M., Assistant Professor of Education.
 WALTER STERRETT LONG, A. M., Assistant Professor of Chemistry.
 NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
 HERMAN DOUTHITT, A. M., Assistant Professor of Zoölogy.
 MAURICE HOLMES REES, A. M., Assistant Professor of Physiology.
 CHESTER ARTHUR BUCKNER,* A. M., Assistant Professor of Education.
 ELLIS BAYLER STOUFFER, Ph. D., Assistant Professor of Mathematics.
 HERBERT WILBUR NUTT, Ph. D., Assistant Professor of Education.
 WILLIAM MCGLASHAN DUFFUS, A. M., Assistant Professor of Economics.
 GRACE MIRIAM CHARLES, Ph. D., Assistant Professor of Botany.
 BENJAMIN J. CLAWSON, A. M., Assistant Professor of Bacteriology.
 JACOB O. JONES, M. S., Assistant Professor of Hydraulics.
 ALBERT C. HODGE, Ph. B., Assistant Professor of Economics.
 BLAINE F. MOORE, Ph. D., Assistant Professor of Political Science.
 JOSEPH G. BRANDT, Ph. D., Assistant Professor of Greek.
 JOSEPHINE BURNHAM, Ph. D., Assistant Professor of English.
 WILLIAM LEWIS EIKENBERRY,† B. S., Assistant Professor of the Teaching
 of Biological Sciences.
 AMIDA STANTON, A. M., Instructor in Romance Languages.
 SOLOMON LEFSCHETZ, Ph. D., Instructor in Mathematics.
 EVANGELINE DOWNEY, A. M., Instructor in Home Economics.
 HARRY VICTOR PALMBLAD, A. M., Instructor in German.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.

ADMINISTRATIVE COMMITTEE.

FRANK W. BLACKMAR.

FRANK H. HODDER.

F. B. DAINS.

W. C. STEVENS.

H. C. THURNAU.

* On leave of absence, second semester, 1915-16.

† Beginning September, 1916.

UNIVERSITY FELLOWS.

HOMER BLINCOE.—*Anatomy.*

DUDLEY JAMES PRATT.—*Botany.*

EPHRAIM JOSEPH SORENSEN.—*Economics.*

AVERY FINCHER OLNEY.—*Education.*

MIRIAM SMYTH.—*English.*

MARION STONE.—*English.*

WALTER HOUSELEY WELLHOUSE.—*Entomology.*

* WILLIAM HENRY FOSTER.—*Geology.*

* MARY ELIZABETH PARKER.—*German.*

ELMER LEROY CRAIK.—*History.*

O. WELLINGTON PATTERSON.—*Latin.*

JESSIE MARIE JACOBS.—*Mathematics.*

CYRIL ARTHUR NELSON.—*Mathematics.*

JAMES LISLE WILLIAMS.—*Physiological Chemistry.*

VERA WEATHERHOGG.—*Romance Languages.*

LESTER DANIEL LACY.—*Sociology.*

† HAZEL MICHAELS.—*German.*

† DEFOREST CLEMENT STEELE.—*History.*

FELLOWS FROM KANSAS COLLEGES.

LEO GLENN SWOGGER.—*Baker University.*

HUGO BARNARD WAHLIN.—*Bethany College.*

MAMIE ALBERTA HIGGS.—*Emporia College.*

ANNA JANE BAKER.—*Friends University.*

WILL A. RANSOM.—*Fairmount College.*

ANDREW A. GRANSTEDT.—*Kansas Wesleyan College.*

PAUL W. HARNLY.—*McPherson College.*

ADA HELEN WEST.—*Midland College.*

EDWARD DANIEL KROESCH.—*Ottawa University.*

CORA HAZEL GAULT.—*Southwestern College.*

ROLLA NEIL HARGER.—*Washburn College.*

* Resigned at the close of first semester.

† Appointed at the beginning of the second semester.



The Graduate School.

The Graduate School was organized in 1896-'97, for the purpose of giving opportunity for students to pursue advanced work, and to encourage independent and scientific investigation. Courses of study for advanced degrees are offered in all of the schools of the University, nearly every department being represented. Through the Graduate School, all the advanced degrees of the University are granted.

REQUIREMENTS FOR ADMISSION.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing on presentation of proper evidence of scholarship and testimonials of good character.

REGISTRATION.

Students wishing to register should first apply to the Dean of the Graduate School. When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after consultation with the student. The student will then submit the courses to the Dean, and if they are approved the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the Catalog, and must be designated as graduate on the enrollment card filed in the Registrar's office.

DEGREES GRANTED.

ACADEMIC DEGREES: Master of Arts, Master of Science, Doctor of Philosophy.

PROFESSIONAL DEGREES: Civil Engineer, Mechanical Engineer, Mining Engineer, Chemical Engineer, Electrical Engineer, Master of Science in Education.

The Requirements for the Degrees of Master of Arts and Master of Science.

When the candidate for the master's degree has selected the department in which his major work is to be done, the head of that department, in consultation with the candidate, approves his work for the master's degree, which may be confined to the department of the major study or may be selected from that and not more than two other departments. The decision of the head of the department is subject to the veto of the Dean of the Graduate School, but appeal may be made from the decision of the Dean to the Graduate Faculty. The head of the major department approves the courses selected for each semester on a card provided for the same, which is kept on file at the Dean's office. If the student subsequently changes his selection of a major department, the graduate work already done can not be counted toward the master's degree unless approved by the head of the new major department.

The master's degree will be granted only after at least one full year's graduate work. The candidate must have completed with high credit thirty hours of work chosen from the courses open to graduates, published in the Catalog, or approved by the departments concerned and the

administrative committee. Courses for which a professional degree is given will not be counted toward this degree. Not more than sixteen hours' credit can be given in one term.

Ordinarily each candidate for the master's degree is required to present a thesis to the head of the major department. The thesis must embody the results of scholarly research on some topic connected with the candidate's major study. The thesis must be completed and given to the head of the department under whose direction it has been done, not later than May 15 preceding the June in which the candidate expects to receive his degree. After examining the thesis, the head of the department shall report its acceptance to the Registrar and deposit the thesis in the office of the Dean of the Graduate School. The thesis must be typewritten and bound in cloth. In special cases, where it seems advisable for the candidate to devote all of his time to regular class work, not involving research, on the recommendation of the head of the department and the consent of the Dean, the requirement of a thesis may be waived.

Ordinarily the candidate for the master's degree is expected to spend a minimum of one year in resident graduate work at some university, the latter half of which at least must be done in residence at the University of Kansas. These regulations permit the acceptance of graduate work done in other institutions to the extent of not more than half of the work, but all credits offered are subject to the approval of the administrative committee. In cases where students have fulfilled the time requirement and have completed all their work within five hours of the amount required they may be permitted to do five hours' work *in absentia* after obtaining the consent of the Dean and the head of the department in which the work is to be done. The term *in absentia* applies to work not done in colleges and universities.

Engineering Degrees.

Graduates in engineering in this University, and masters of science who have received their degrees through the Graduate Faculty, having majored in engineering, are eligible to the professional degree of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate courses taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

They must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material become the property of the University.

All theses for professional degrees must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

Doctor of Philosophy.

The degree of doctor of philosophy will be granted for advanced scholarship, and the performance of independent work in some special line, under the following conditions:

1. The candidate must be a baccalaureate graduate of some college or university of good standing; and he must give satisfactory evidence to the Faculty of the Graduate School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university, the last year of which he must have spent as a resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination is given before the Faculty of the Graduate School, where the candidate may be required to defend his thesis. This thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done, not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him it is placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If the thesis is finally approved, the candidate must, before receiving the degree, deliver at least fifty printed copies of it to the Librarian of the University, or give proper security for the printing of that number; but if the thesis has already been printed, ten copies only need be deposited with the Librarian.

UNIVERSITY FELLOWSHIPS.

General Fellowships.

For the encouragement of advanced study and research, the University of Kansas has established seventeen fellowships for graduates of special merit. Each fellowship entitles the holder to \$280. Fellows are expected to devote their time to investigation and research leading to an advanced degree, except that they may be required to give not exceeding six hours of service per week in the department to which they are assigned. These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have distinguished themselves for special scholarship and marked ability.

For the year 1916-'17 these fellowships may be awarded to the best qualified candidates applying in one of the departments enumerated below.

Applications for fellowships may be filed, on blanks provided, with the Dean of the Graduate School on or before the first day of March of the collegiate year preceding that during which the fellowship is desired. Such applications may be accompanied by recommendations of instructors and by specimens of original work of the applicants, either published or in manuscript.

The applications of the various candidates are referred to the administrative committee of the Graduate School, which acts as a fellowship committee in consultation with the heads of the departments in which fellowships are granted. The committee, after consideration of the relative merits of all applicants, nominates the successful candidates and recommends them to the Board of Administration for election. Fellows are elected for a term of one year. However, in special cases, they may be reelected for one additional year.

Fellowships for Graduates of Kansas Colleges.

In order to promote advanced study at the University of Kansas, and to encourage the graduates of Kansas colleges and universities to continue their work, the University of Kansas offers one fellowship of \$280 to each of eleven Kansas colleges for the academic year 1915-'16 and each year thereafter. The colleges to which fellowships are offered for 1916-'17 are: Baker University, Bethany College, Emporia College, Fairmount College, Friends University, Midland College, McPherson College, Ottawa University, Southwest Kansas College, Washburn College, and

Salina Wesleyan College. This list is subject to change each year by the administrative committee of the Graduate School after consultation with the committee of visitation of colleges.

Candidates for fellowships are to be nominated by the faculties of the respective colleges, from the classes graduating in June before the September when they are to enter upon their fellowships. However, in case there are no satisfactory candidates in the classes referred to, candidates may be nominated from other graduating classes. It is understood that the candidate shall be from among those attaining high scholarship in the respective classes. On or before the first day of March of the year in which the fellowship is awarded, the president of the college receiving the fellowship shall send the name of the candidate nominated by the college faculty or its committee, with a statement of his qualifications, to the Dean of the Graduate School of the University of Kansas.

The candidate's application will be considered by the administrative committee of the Graduate School as in case of other fellowships, and if satisfactory he will be recommended to the Board of Administration for election. A fellow so elected may choose his work, in accordance with the rules of the Graduate School, in any of the departments offering work in the Graduate School.

Each fellow may be called upon for not more than four hours' service per week in the department in which he chooses his major work.

DEPARTMENTS AND EQUIPMENT.

The following departments offer graduate work in the University. In the majority of them the facilities are adequate for thorough preparation for the doctor's degree, and in all of them the facilities are excellent for work leading to the master's degree. All the courses named are well equipped for graduate instruction. Laboratories and libraries are ample for this purpose. Especial opportunity is given for research and original investigation.*

Anatomy.
Bacteriology.
Bacteriology and Pathology.
Botany.
Chemistry.
Economics and Commerce.
Education.
Engineering.
Engineering—Mechanics.
Engineering, Civil.
Engineering, Electrical.
Engineering, Mechanical.
English Language and Literature.
Entomology.
Fine Arts.
Geology and Mineralogy.
Germanic Languages and
Literatures.

Greek.
History and Political Science.
Home Economics.
Journalism.
Latin Language and Literature.
Law.
Mathematics.
Pharmacy.
Philosophy and Psychology.
Physics and Astronomy.
Physiology.
Physiology and Pharmacology.
Romance Languages and
Literatures.
Sociology.
Zoölogy.

* For description of equipment of the departments, see College Section.

DESCRIPTION OF COURSES.*

ANATOMY.

Professor SUNDWALL.
Associate Professor COGHILL.
Doctor SMITH.

The minimum requirement for entrance into graduate courses is thirty-five hours of biological work, including the equivalents of zoölogy 1 or 2 and 3, and anatomy 1, 2, 3, 4, 5, 6, 7, 8, 9. A reading knowledge of both French and German is essential.

100.—COMPARATIVE NEUROLOGY. Five hours credit. Both semesters, by appointment. Fee, \$3. The evolution of the structure and function of the vertebrate nervous systems. Coghill.

101.—RESEARCH WORK IN NEUROLOGY. Five hours credit. Both semesters. *Admission may be obtained to this course only after consultation.* A comprehensive knowledge of general anatomy, physiology, and neurology is essential. Coghill.

102.—ANATOMICAL CORRELATION. Two hours credit. Both semesters. Normal functions are studied from the point of view of the reflex mechanism. Phylogenetic and ontogenetic considerations. Assignments of individual problems and written reports. Coghill.

103.—PHYSIOLOGICAL HISTOLOGY. Five hours credit. First semester. Fee, \$3. Changes in the cell occasioned by various stimuli will be studied by means of microchemical staining. Sundwall.

104.—ADVANCED WORK IN ANATOMY. Five hours credit. Both semesters. This course is especially designed for those wishing to do special work in gross or microscopic anatomy. Sundwall.

105.—RESEARCH WORK. Five hours credit. Both semesters. Various problems for research will be assigned to students who are candidates for the higher degrees. Sundwall and Coghill.

106.—SEMINAR. Three hours credit. Both semesters. In this course subjects of current interest are discussed as they appear in the various journals. Sundwall and Coghill.

The following courses are open to graduate students from other departments who may wish to elect certain courses in the department of anatomy.

150-153.—HUMAN DISSECTION. A complete dissection of all structures. Sundwall, Coghill, and Smith.

Course 150.—Dissection of arm and thoracic wall. Three hours credit. Fee, \$5.

Course 151.—Dissection of leg, perineum and abdominal wall. Three hours credit. Fee, \$5.

Course 152.—Dissection of thoracic and abdominal viscera. Four hours credit. Fee, \$5.

Course 153.—Dissection of head and neck. Four hours credit. Fee, \$5.

* DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday, and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

Courses numbered from 100 to 149 are for graduates only. All others are offered in the College or the professional schools; detailed descriptions of these will be found in the separate catalogs.

154.—HUMAN OSTEOLOGY. One hour credit. No fee. A systematic study of the human skeleton. Supplemented by drawings, clay-modeling, etc. Smith.

155.—TOPOGRAPHICAL ANATOMY. Three hours credit. Fee, \$3. A laboratory course in human anatomy, including dissections, study of models, preparations, cross sections. Prerequisites, courses 1, 2, 3, 4, 5. (At Rosedale.) Sundwall.

156.—HISTOLOGY AND SPLANCHNOLOGY. Five hours credit. Fee, \$5. A brief course in the structure of the cell, followed by a systematic study of the structure of organs. Coghill, and assistants.

157.—EMBRYOLOGY. Two hours credit. Fee, \$3. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Coghill and assistants.

158.—NEUROLOGY. Three hours credit. Fee, \$3. Gross and microscopic anatomy of the nervous system. Coghill and assistants.

BACTERIOLOGY.

Professor BILLINGS.
Assistant Professor SHERWOOD.
Assistant Professor CLAWSON.
Assistant Professor YOUNG.

100.—RESEARCH IN BACTERIOLOGY. Two or more hours credit. By appointment. Graduates taking this course must satisfy the instructor that they are able to carry on original investigation in the special field selected. Fee, \$1 for each hour of enrollment. Billings.

150.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters; two sections: first semester 10:30 to 12:30 and 1:30 to 3:30; second semester, 8:30 to 10:30 and 10:30 to 12:30. Fee, \$5. Billings, Clawson, and Sherwood.

151.—GENERAL BACTERIOLOGY AND WATER ANALYSIS. Five hours credit. First semester, 8:30 to 10:30. Bacteriology fee, \$3. Young.

153.—BACTERIOLOGY OF FOODS. Three hours credit. Second semester, 1:30 to 3:30. Fee, \$3. Clawson.

154.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10:30 to 12:30. Fee, \$5. Sherwood.

155.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1:30 to 3:30. Fee, \$2. Clawson.

156.—ADVANCED WATER BACTERIOLOGY. Three hours credit. Second semester, 8:30 to 10:30. Fee, \$3. Young.

157.—IMMUNITY. Five hours credit. Second semester, 10:30 to 12:30. Fee, \$5. Sherwood.

160.—BACTERIOLOGICAL JOURNALS. One hour credit. First semester, by appointment. Billings.

161.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Fee, \$1 for each hour. Billings and the instructor directly concerned.

BACTERIOLOGY AND PATHOLOGY.

(MEDICAL.)

Professor MAJOR.
Associate Professor TRIMBLE.

101.—ADVANCED BACTERIOLOGY. By appointment. Includes the more difficult technical procedures and problems of immunity, serology, vaccines, etc. Major and Trimble.

102.—PATHOLOGY. By appointment. Research work in the various branches of pathology and immunology. Major and Trimble.

104.—SPECIAL PATHOLOGY. (*At Rosedale.*) Three hours credit. First semester, Monday and Wednesday, 1 to 4. Recitations and laboratory. This course takes up the study of special pathology as illustrated by gross and microscopic specimens. Major.

BOTANY.

Professor STEVENS.
Associate Professor SHULL.
Assistant Professor CHARLES.

100.—MORPHOLOGY AND PHYSIOLOGY OF THE PLANT CELL. Five or ten hours credit. First and second second semester, or both semesters, by appointment. Fee, \$1. A study of cell characters, adaptation to specific functions, and behavior under varying environment; nuclear and cell division; reproduction. Stevens.

101.—PLANT ECOLOGY. Three hours, five hours, or ten hours credit. Throughout the year, by appointment. The relation of plants to their environment. Field work and reading. Warming's, Schimper's, Clements' and Cows' texts, and current literature. Stevens.

102.—RESEARCH IN PLANT HISTOLOGY. Both semesters, by appointment. Stevens.

103.—RESEARCH IN PLANT PHYSIOLOGY. Both semesters, by appointment. Open only to graduate students specializing in plant physiology, and who expect to take advanced degrees in the department with physiology as the major subject. Registration only after consultation. Shull.

104.—BOTANICAL CONFERENCE. One hour credit. By appointment. Review and discussion of current botanical work. Reports on assigned subjects.

150.—SYSTEMATIC BOTANY. Five hours credit. First semester, 8:30 to 10:30. Charles.

152.—PLANT GENETICS. Five hours credit. Second semester, 8:30 to 10:30. Shull.

153.—PLANT PHYSICS. Five hours credit. First semester, 1:30 to 3:30. Fee, \$1. Shull.

154.—PLANT CHEMICS. Five hours credit. Second semester, 1:30 to 3:30. Fee, \$1. Shull.

155.—MORPHOLOGY OF THALLOPHYTES. Three hours or five hours credit. Second semester, by appointment. Fee, \$1. Charles.

156.—MORPHOLOGY OF FUNGI. Three hours credit. Second semester, 10 to 12. Fee, \$1. Charles.

157.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three hours credit. First semester, by appointment. Fee, \$1. Charles.

158.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours credit. First or second semester, or both, by appointment. Fee, \$1. Stevens.

159.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES AND ARCHEGONIATES. Five hours credit. First or second semester, by appointment. Fee, \$1. Charles.

161.—TREES AND SHRUBS. Three hours credit. First semester, 2:30 to 3:30. Stevens.

160.—AGRICULTURE. Three hours credit. First semester, 8:30 to 9:30. Fee, \$1. Shull.

Credit in the Graduate School will be allowed only on the satisfactory completion of original investigations on some agricultural topic chosen in consultation with the department and the presentation of a thesis embodying the results of the investigation.

CHEMISTRY.

| | | |
|---------------------|-----------|--|
| Professor | BAILEY. | |
| Professor | CADY. | |
| Professor | DAINS. | |
| Associate Professor | WHITAKER. | |
| Associate Professor | ALLEN. | |
| Assistant Professor | YOUNG. | |
| Assistant Professor | FARAGHER. | |
| Assistant Professor | LONG. | |

PREREQUISITES. Students who expect to take a graduate major in chemistry and those who do advanced work must present not less than the substantial equivalent of our undergraduate courses 1, 2, 3, 59a or 59b, and 54 before beginning their graduate work.

FEES. In laboratory courses a fee sufficient to cover expenses will be charged.

100.—HISTORY OF CHEMISTRY. Two hours credit. Second semester. A course in the history of chemistry and the development of chemical theories. Lectures, library work, and the presentation of reports. The complete course requires two years, the first bringing the subject down to 1820 and the second from that time to date. Dains.

101.—ANALYTICAL CHEMISTRY. Five hours credit. Either semester, by appointment. A research course. This may include the investigation of some problems in metallurgical or manufacturing processes, the complete investigation of some proposed water supply, the development of new methods in analytical chemistry, or a study and comparison of methods already in use. Bailey.

102.—ORGANIC CHEMISTRY. Five hours credit. Either semester, by appointment. A research course. This course offers, to those who have proper preparation, a chance for extended study and original investigation. Dains.

103.—PHYSICAL CHEMISTRY. Five hours credit. Either semester, by appointment. A research course extending over two or more semesters. An opportunity is offered, to those who are sufficiently advanced, to carry on investigations in this branch of chemistry. Cady.

104.—ORGANIC PREPARATIONS (advanced). Five hours credit. Either semester, by appointment. Must be preceded by course 60 or its equivalent. A study of organic synthetical methods and ultimate organic analyses. Dains.

105.—ELECTROCHEMISTRY. Five hours credit. Second semester, by appointment. A laboratory course on the reactions involving oxidation and reduction, electrosyntheses and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. Must be preceded by course 64. Faragher.

106.—CHEMICAL STATICS AND DYNAMICS. Three hours credit. Second semester, by appointment. A study of the manner in which chemical reactions take place, and the equilibria which result, from the standpoint of reaction velocities. Prerequisites: general physics, calculus, physical chemistry 164 or 165, and organic chemistry. Cady.

107.—THE PHASE LAW. Two hours credit. Second semester, by appointment. A study of chemical equilibria from the standpoint of the phase law of Gibbs. Prerequisite, course 165. Cady.

108.—GAS ANALYSIS. Two hours credit. First semester, by appointment. A laboratory course. Prerequisite, course 54 (College). Allen.

110.—ELECTROLYTIC ESTIMATION OF METALS. Two hours credit. Second semester, by appointment. A laboratory course. Prerequisite, course 54 (College). Allen.

113.—ADVANCED ORGANIC CHEMISTRY. Two hours credit. First or second semester. Special topics in advanced organic chemistry. Dains.

114.—CHEMICAL SEMINAR. One hour credit. Each semester, by appointment. A review of recent literature.

First semester: Inorganic and physical chemistry. Cady.

Second Semester: Organic chemistry and allied topics. Dains.

115.—ADVANCED TOPICS IN INORGANIC CHEMISTRY. Two hours credit. First semester. Faragher.

116.—INORGANIC PREPARATIONS. (Advanced.) Two or three hours credit. Second semester. Faragher.

151.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. Whitaker and Parkhurst.

152.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. Whitaker and Parkhurst.

155.—QUANTITATIVE ANALYSIS. Two, three, or five hours credit. Either semester. Allen.

156.—WATER ANALYSIS. Three or five hours credit. Second semester, by appointment. Young.

157.—ASSAYING AND METALLURGICAL ANALYSIS. Five hours credit. Second semester, 1:30 to 5:30, and by appointment. Whitaker and Parkhurst.

158.—FOOD ANALYSIS. Two, three or four hours credit. Either semester, by appointment. Long.

160.—ADVANCED ORGANIC CHEMISTRY. Five hours credit. Second semester, Monday, Wednesday, Friday, at 9:30; laboratory by appointment.

161.—METALLURGY I. Three hours credit. First semester, at 11:30. Whitaker.

162.—METALLURGY II. Three hours credit. Second semester, at 9:30. Whitaker.

163.—METALLURGICAL LABORATORY. Two hours credit. First semester, by appointment. Whitaker.

112.—METALLOGRAPHY. Two hours credit. Second semester, by appointment. Laboratory work and conferences. Whitaker.

164.—PHYSICAL CHEMISTRY. Five hours credit. First semester, at 9:30. Cady.

165.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 9:30. Cady.

166.—GENERAL METALLURGY. Two hours credit. First semester, at 11:30. Whitaker.

190.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. Second semester, by appointment. Bailey.

STATE CHEMICAL RESEARCH.

Associate Professor WHITAKER.

The following investigations are being conducted:

I.—Comparative Methods for the Disposal of Sewage. F. M. Veatch, B. S., H. P. Evans, A. B., and L. E. Jackson.

IV.—Composition of Gases of the Mid-Continental Field. E. E. Lyder, M. S.

VII.—Flotation Applied to Kansas Zinc Wastes. George Belchic, M. S. Assistants: R. O. Neal, S. F. Farley, and H. L. Van Velzer.

ECONOMICS AND COMMERCE.

Professor MILLIS.
 Professor BOYNTON.
 Assistant Professor PUTNAM.
 Assistant Professor DUFFUS.
 Assistant Professor HODGE.

100.—SEMINAR. Two to ten hours credit. Either semester, by appointment. This is a research course for mature students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student must pursue a definite line of work under the personal direction of one of the instructors.

150.—MONEY AND CREDIT. Three hours credit. First semester, at 10:30. Boynton.

151.—BANKING. Three hours credit. Second semester, at 10:30. Boynton.

152.—PRACTICAL BANKING. Two hours credit. First semester, at 10:30. Boynton.

153.—INVESTMENTS. Two hours credit. Second semester, at 10:30. Boynton.

154.—BUSINESS ORGANIZATION AND MANAGEMENT. Two hours credit. First semester, at 1:30. (Not given in 1916-'17.) Hodge.

155.—HISTORY AND ORGANIZATION OF TRANSPORTATION. Two hours credit. First semester, at 11:30. (Given alternate years. Given in 1916-'17.) Boynton.

156.—RAILWAY RATES AND REGULATION. Two hours credit. Second semester, at 11:30. (Given alternate years. Given in 1916-'17.) Boynton.

157.—CORPORATIONS AND TRUSTS. Two hours credit. First semester, at 8:30. Putnam.

158.—CORPORATION FINANCE. Two hours credit. Second semester, at 8:30. (Given alternate years. Not given in 1916-'17.) Putnam.

160.—PUBLIC FINANCE. Three hours credit. First semester, at 8:30. Millis.

161.—AMERICAN METHODS OF TAXATION. Three hours credit. Second semester, at 8:30. Millis.

162.—FINANCIAL HISTORY OF THE UNITED STATES. Two hours credit. First semester, at 9:30. (Not given in 1916-'17.) Millis.

163.—INSURANCE. Three hours credit. Second semester, at 9:30. (Not given in 1916-'17.) Duffus.

164.—ELEMENTS OF ACCOUNTING. Three hours credit. First semester, at 2:30. Hodge.

165.—ADVANCED ACCOUNTING. Three hours credit. Second semester, at 2:30. Hodge.

166.—COST ACCOUNTING. Three hours credit. First semester, at 1:30. Hodge.

167.—ACCOUNTING PROBLEMS. Two hours credit.

168.—STATISTICS. Three hours credit. Second semester, at 9:30. Millis.

169.—BUSINESS LAW. Three hours credit. Second semester, at 1:30. Hodge.

170.—LABOR PROBLEMS: TRADE-UNIONS. Two hours credit. First semester, at 8:30. Millis.

171.—LABOR PROBLEMS: THE STATE IN RELATION TO LABOR. Two hours credit. Second semester, at 8:30. (Given alternate years. Not given in 1916-'17.) Millis.

172.—IMMIGRATION PROBLEMS. Two hours credit. (Not given in 1916-'17.) Millis.

180.—ECONOMICS OF AGRICULTURE. Two hours credit. Second semester, at 8:30. (Given alternate years. Given in 1916-'17.) Putnam.

181.—MARKETS AND MARKETING. Three hours credit. First semester, at 11:30. Duffus.

182.—MUNICIPAL INDUSTRIES. Two hours credit. Second semester, at 11:30. Duffus.

191.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH I. Two hours credit. First semester. (Given alternate years. Given in 1916-'17.) Millis.

192.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH II. Two hours credit. Second semester. A continuation of course 191. (Given alternate years. Given in 1916-'17.) Millis.

193.—ECONOMIC THEORY, TO ADAM SMITH. Two hours credit. First semester, at 11:30. (Given alternate years. Not given in 1916-'17.) Boynton.

194.—ECONOMIC THEORY, SINCE ADAM SMITH. Two hours credit. Second semester, at 11:30. (Given alternate years. Not given in 1916-'17.) Boynton.

EDUCATION.

Professor KELLY.

Professor OLIN.

Professor JOHNSON.

Professor SCHWEGLER.

Professor KENT.

Assistant Professor CARTER.

Assistant Professor BUCKNER.

Assistant Professor NUTT.

Assistant Professor EIKENBERRY.

100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Two hours credit. Both semesters, by appointment. Carter.

101.—SEMINAR IN MENTAL DEFECTS. Two hours credit. Both semesters, by appointment. Schwegler.

102.—SEMINAR IN EDUCATIONAL SYSTEMS OF HERBART AND FROEBEL. Two hours credit. First semester, by appointment. Olin.

103.—SEMINAR IN ORIGIN AND EARLY DEVELOPMENT OF UNIVERSITIES. Two hours credit. Second semester, by appointment. Olin.

104.—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two hours credit. Both semesters, by appointment. Kelly.

150.—HISTORY OF ANCIENT AND MEDIAEVAL EDUCATION. Three hours credit. First semester, at 8:30 and 3:30. Olin.

151.—HISTORY OF MODERN EDUCATION. Three hours credit. First semester, at 2:30; second semester, at 8:30 and 3:30. Olin.

153.—SOCIAL EDUCATION. Two hours credit. First semester, at 11:30. Carter.

154.—EDUCATIONAL CLINIC. Three hours credit. Second semester, by appointment. Schwegler.

155.—MENTAL MEASUREMENT OF SCHOOL CHILDREN. Three hours credit. First semester, at 9:30. Schwegler.

156.—VOCATIONAL EDUCATION. Three hours credit. First semester, at 10:30. Johnson.

157.—SCHOOL HYGIENE. Two hours credit. Second semester, at 3:30. Nutt.

158.—NATIONAL EDUCATIONAL SYSTEMS. Three hours credit. Second semester, at 10:30. Kelly.

- 159.—EDUCATIONAL CLASSICS I. Two hours credit. First semester, at 10:30. Olin.
- 160.—EDUCATIONAL CLASSICS II. Two hours credit. Second semester, at 10:30. Olin.
- 161.—HIGH-SCHOOL ADMINISTRATION. Three hours credit. Both semesters, at 8:30. Johnson.
- 163.—EDUCATION IN AMERICA. Three hours credit. second semester, at 9:30. Olin.
- 164.—EDUCATIONAL PSYCHOLOGY. Three hours credit. First semester, at 1:30; second semester, at 9:30. Carter.
- 165.—GENETIC PSYCHOLOGY FOR TEACHERS. (Not given in 1915-'16.)
- 166.—EDUCATIONAL STATISTICS. Two hours credit. First semester, at 8:30. Kelly.
- 167.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours credit. Second semester, at 9:30. Carter.
- 168.—PRINCIPLES OF EDUCATION. Three hours credit. First semester, at 11:30. Schwegler.
- 169.—TECHNIQUE OF TEACHING. Two hours credit. First semester, at 3:30. Nutt.
- 171.—THE ABNORMAL CHILD. Three hours credit. First semester, at 10:30. Schwegler.
- 172.—SUPERVISION OF INSTRUCTION. Two hours credit. First semester, at 9:30. Kent.
- 173.—CITY SCHOOL ADMINISTRATION. Two hours credit. Second semester, at 8:30. Kent.
- 174.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Three hours credit. First semester, at 8:30. Kent.
- 175.—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit. First semester, at 9:30; second semester, at 1:30. Carter.
- 177.—PRACTICAL PROBLEMS OF PUBLIC SCHOOL EDUCATION. Two to three hours credit. Both semesters, Sat., at 9.
- 178.—ADOLESCENCE. Three hours credit. Second semester, at 11:30. Schwegler.
- 179.—MORAL EDUCATION. Two hours credit. Second semester, at 11:30. Schwegler.

Teachers' Courses in Special Subjects.

Graduate credit is not given for practice teaching.

- 108.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Stimpson.
- 181.—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Two hours credit. Both semesters, at 4:30. Eikenberry.
- 182.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours credit. Second semester, at 9:30. Haworth.
- 183.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit. First semester, at 9:30. Sprague.
- 185.—TEACHERS' COURSE IN GERMAN. Three hours credit. Second semester, at 9:30. Engel.
- 186.—TEACHERS' COURSE IN ENGLISH. Three hours credit. First semester, at 2:30. Hopkins.
- 187.—TEACHERS' COURSE IN LATIN. Two hours credit. Second semester, at 2:30. Walker.
- 188.—TEACHERS' COURSE IN FRENCH. Three hours credit. First semester, by appointment. NeuenSchwander.

189.—TEACHERS' COURSE IN MATHEMATICS. Three hours credit. Second semester, at 11:30. Mitchell.

190.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. Second semester, by appointment. Bailey.

191.—TEACHERS' COURSE IN HISTORY. Two hours credit. First semester, at 2:30. Becker.

ENGINEERING MECHANICS.

Professor H. A. RICE.

Assistant Professor J. O. JONES.

154.—ENGINEERING MATERIALS. Five hours credit. Second semester, by appointment. A study of the methods of manufacture of structural materials and the different means and machines used in their testing. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the laboratory. Recitations, lectures, library and laboratory work. Rice.

155.—HYDRAULICS. Three hours credit. Either semester, at 10:30. A study of the laws governing the pressure and flow of liquids. Calculation of the discharge over weirs and through pipes. Principles and types of hydraulic and pumping machinery. J. O. Jones.

158.—HYDRAULIC POWER. Three hours credit. First semester, by appointment. Relations of rainfall, run-off and stream flow to water-power development; preliminary location plans for a plant; designs of dams and head-works; selection of turbines. J. O. Jones.

ENGINEERING—Civil.

Professor H. A. RICE.

Professor C. C. WILLIAMS.

Associate Professor HASKINS.

100.—STRUCTURAL DESIGNING. Five hours credit. First or second semester, by appointment. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, standpipes, and elevated tanks. This course is designed to follow course 162. Lectures, recitations, and detail designing in the drawing room. Rice.

101.—RESEARCH COURSE. A course of investigation of some matter directly related to civil engineering. This course should run through the year, making ten hours' credit. Arrangements for the course should be made with Professor Rice.

162.—BRIDGE DESIGNING. Four hours credit. Second semester, daily, 1:30 to 3:30. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 61. Rice.

164.—SANITARY ENGINEERING. Five hours credit. Second semester, by appointment. An advanced course. Prerequisites, courses in water supply and sewerage. A general study of public sanitation, particularly with reference to the water-borne infectious diseases. Influence of good sewerage, drainage and water supply upon the health of communities. Visits to sanitary engineering works. State control of public water supplies and pollution of streams. Lectures, recitations, and reading. Haskins.

165.—REINFORCED CONCRETE. Three hours or five hours credit. First or second semester, at 10:30. Rice.

166.—MAINTENANCE OF WAY. Three hours credit. Second semester, at 10:30. An advanced course in railway engineering. Williams.

167.—RAILWAY TERMINAL STRUCTURES. Five hours credit. Second semester. An extended study of the design of retaining walls, water

tanks, coal bunkers and coaling stations, ore bins, grain bins and elevators, turntables, transfer tables, train sheds, ash pits, chimneys, and other accessory structures. Williams.

168.—PAVEMENTS. Three hours credit. Second semester. Lectures and laboratory. A study of road-building rocks, bituminous materials, brick and brick clays, wood blocks, fillers, and the economical selection of type of pavement. Williams.

169.—FOUNDATIONS. Three hours credit. Second semester. A study in the design and construction of ordinary and subaqueous foundations. Williams.

ENGINEERING—Mechanical.

Professor WALKER.
Associate Professor SIBLEY.
Associate Professor SLUSS.

100.—ADVANCED ENGINEERING LABORATORY. Five hours credit. Both semesters, by appointment. Research work in some line connected with power development, fuels, lubrication or refrigeration, as may be selected in consultation with the instructor. Sluss.

101.—ADVANCED DESIGNING. Five hours credit. Both semesters, by appointment. The course calls for a complete design in all details of some machine or of a plant for manufacturing or power development purposes. Steam and gas machinery and systems of power transmission are given particular attention. Sibley.

102.—RESEARCH COURSE. Five hours credit. Each semester, by appointment. A full presentation of some engineering subject to be selected in consultation with the instructor in charge. It may be a subject which is being treated in course 100 or 101. Walker and Sluss.

103.—ADVANCED THERMODYNAMICS. Three hours credit. First semester, by appointment. An advanced course based on the mathematical theory of heat interchanges. Open to those who have taken the undergraduate course in the School of Engineering, or its equivalent. Walker.

ENGINEERING.

Professor WALKER.

150.—MANUFACTURING. Two hours credit. First semester, at 8:30. A study of processes, of factors controlling in the selection of equipment, and of relationships of value of equipment and cost of labor and power to the value of product in a few selected industries. Walker.

151.—INDUSTRIAL ADMINISTRATION. Three hours credit, Second semester, at 8:30. A study of the development of modern systems of organization and control of industrial enterprises. It includes an elementary study of the partnership and corporation and of contracts; also, of cost elements in production, labor wage systems, and methods for valuating public works. Walker.

ENGINEERING—Electrical.

Professor SHAAD.
Assistant Professor JOHNSON.

100.—POWER TRANSMISSION AND ELECTRIC RAILWAYS. Four hours credit. Second semester, by appointment. An advanced course in these subjects, consisting of lectures, assigned readings, and problems, special attention being paid to the engineering features of long-distance power transmission and the electrification of trunk-line railways. Shaad.

157.—ELECTRIC LIGHTING. Three hours credit. Second semester, at 11:30. Johnson.

158.—ELECTRIC POWER TRANSMISSION. Five hours credit. Second semester, at 10:30. Shaad.

162.—CENTRAL STATIONS. Three hours credit. Second semester, Monday, Wednesday, and Friday, at 10:30. Shaad.

163.—ADVANCED ELECTRICAL LABORATORY. Five hours credit. Second semester, at 1:30. Johnson.

ENGLISH LANGUAGE AND LITERATURE.

Professor DUNLAP.
 Professor HOPKINS.
 Professor O'LEARY.
 Associate Professor WHITCOMB.
 Associate Professor SISSON.
 Associate Professor JOHNSON.*
 Associate Professor CROISSANT.*
 Associate Professor LYNN.
 Assistant Professor GARDNER.
 Assistant Professor BURNHAM.

103.—ENGLISH LITERATURE AS INFLUENCED BY OTHER LITERATURES. Three hours credit. Second semester, at 8:30. An introductory review of the subject, followed by study of a selected topic. Whitcomb.

106.—ENGLISH PROSE OF THE EIGHTEENTH CENTURY. Three hours credit. First semester, at 9:30. The authors studied will be Swift, Addison, Steele, Johnson, Goldsmith, and Burke. Lectures, library work, and the preparation of a thesis. O'Leary.

107.—HISTORY OF ENGLISH CRITICISM. Two hours credit. Second semester, by appointment. This course will be devoted to the general development of English criticism, or to some specialized field, according to the preparation and needs of the class. Whitcomb.

108.—LATER NINETEENTH CENTURY VERSE. Two hours credit. Second semester, by appointment. Special study of the poetry of Arnold, Fitzgerald, Clough, Swinburne, the Rossettis and William Morris. A brief survey of the minor poets of the period and of contemporary verse. Johnson.

109.—HISTORY OF THE LITERATURE AND THE TEACHING OF RHETORIC IN ENGLISH. Two hours credit. First semester, at 10:30. Lectures, library reading, and the preparation of a thesis. O'Leary.

110.—ENGLISH PROSODY. One hour credit. Second semester, by appointment. The history of English verse and verse forms. Hopkins.

111.—EPIC POETRY. Three hours credit. First semester, by appointment. Study of the form and subject matter of the epic, and of the general place of epic poetry in the history of English literature. Whitcomb.

114.—HISTORY OF THE ENGLISH LANGUAGE. Three hours credit. Second semester. After a study of the general principles of linguistic change, and some study of Old English as a Germanic dialect, the development of the sounds, inflections, and syntax of English will be traced from old to modern times. Elementary Old English and a reading knowledge of German are prerequisite. Burnham.

115.—THE DEVELOPMENT OF ENGLISH PROSE. Two hours credit. First semester, Tuesday and Thursday, at 11:30. A study of the important prose between 1350 and 1660, with a survey of the development of prose style. Sisson.

116 and 117.—SEMINAR IN ENGLISH LITERATURE. Three to five hours credit. Both semesters, by appointment. Individual research. In this course a properly qualified student may investigate an approved subject, under the guidance of the instructor. Designed in part for students preparing theses for the master's degree. Whitcomb.

* Absent on leave, 1915-'16.

150.—NARRATION AND DESCRIPTION. Three hours credit. First semester, at 8:30 and 9:30. O'Leary and Lynn.

151.—NARRATION AND DESCRIPTION. Two hours credit. Second semester, at 8:30 and 9:30. O'Leary and Lynn.

152.—EXPOSITION. Two hours credit. First semester, at 9:30. Gardner.

153.—ADVANCED ARGUMENT. Three hours credit. Second semester, at 2:30. Hopkins.

155.—LITERARY CRITICISM. Two hours credit. First semester, at 1:30. Hopkins.

156.—VERSIFICATION. One hour credit. First semester, Monday, at 4:30. Hopkins.

157.—ESSAY WRITING. Two hours credit. Second semester, at 10:30. O'Leary.

158.—PROSE INVENTION. Two hours credit. Second semester, at 1:30. Hopkins.

160.—ELEMENTARY OLD ENGLISH. (Anglo-Saxon.) Three hours credit. First semester, at 3:30. Burnham.

161.—ELEMENTARY OLD ENGLISH. (Beowulf.) Two hours credit. Second semester, at 3:30. Burnham.

162.—MIDDLE ENGLISH. Two hours credit. First semester, at 2:30. Burnham.

163.—MIDDLE ENGLISH. Three hours credit. Second semester, at 3:30. Burnham.

164.—ADVANCED OLD ENGLISH. Three hours credit. First semester, at 1:30. Burnham.

165.—ENGLISH METRICAL ROMANCES. Two hours credit. Second semester, at 2:30. Burnham.

169.—METHODS OF TEACHING ENGLISH. Three hours credit. First semester, at 2:30. (See Education 186.) Hopkins.

171.—AMERICAN LITERATURE. Three hours credit. First semester, at 1:30. Hopkins.

172.—AMERICAN LITERATURE. Three hours credit. Second semester, at 1:30. Hopkins.

173.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. First semester, at 9:30. O'Leary.

174.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours credit. Second semester, at 9:30. O'Leary.

175.—VICTORIAN LITERATURE, exclusive of the novel and Tennyson and Browning. Two hours credit. First semester, at 10:30. Dunlap.

176.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. First semester, at 11:30. Dunlap.

177.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. Second semester, at 9:30. Dunlap.

178.—SHAKSPERE. Three hours credit. Both semesters, at 10:30. Dunlap.

179.—CHAUCE. Three hours credit. First semester, at 9:30. Dunlap.

180.—SHELLEY AND KEATS. Two hours credit. Second semester, at 11:30. Dunlap.

181.—BROWNING AND TENNYSON. Two hours credit. Second semester, at 8:30. Lynn.

182.—CARLYLE AND EMERSON. Two hours credit. Second semester, at 2:30. Johnson.

183.—MILTON AND HIS CONTEMPORARIES. Two hours credit. Second semester, at 2:30. Johnson.

184.—THE MODERN ENGLISH LYRIC. Two hours credit. First semester, at 3:30. Whitcomb.

185.—TECHNIC AND THEORY OF THE DRAMA. Two hours credit. First semester, at 2:30. Whitcomb.

186.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. First semester, at 2:30. Whitcomb.

187.—HISTORY OF THE ENGLISH DRAMA. Two hours credit. Second semester, at 2:30. Whitcomb.

188.—THE ENGLISH NOVEL. Three hours credit. Second semester, at 11:30. Dunlap.

189.—THE ENGLISH ESSAY. Two hours credit. Second semester, at 9:30. O'Leary.

ENTOMOLOGY.

(1916-'17.)

Professor HUNTER.

Assistant Professor HUNGERFORD.

100.—ORIGINAL INVESTIGATION. Five hours credit. Throughout the year, by appointment. Experimental work in parthenogenesis. Fee, \$1. Hunter.

101.—FIELD ENTOMOLOGY, BIOLOGICAL SURVEY. Five hours credit. Throughout the year, including the Summer Session. The department is engaged in a survey of insect life in the state. This work will be resumed at the opening of the Summer Session. The course consists of a taxonomic and biologic study of all existing forms, investigations in their life histories, and relations to environments. Appointments on this survey are made through consultation with the department. Hunter.

102.—MORPHOLOGICAL DEVELOPMENT. Five hours credit. Throughout the year. Problems assigned with reference to the attainments of individual students. Fee, \$1.50. Hunter.

103.—ORCHARD LIFE AND FOREST LIFE. Five hours credit. Throughout the year. The State Entomological Commission is conducting a comprehensive and detailed survey of the insect life as it pertains to the orchards and forestry of the state. In this work special attention is given to statistical methods and detailed illustrations of distribution by means of maps and charts. Arrangements have been made whereby a limited number of well-prepared students may receive appointments for credit on this work. Hunter.

104.—CONFERENCE. One hour credit. Throughout the year, by appointment. This course affords an opportunity for the presentation and discussion of current research in this branch of science. During the present year the subject for consideration is the influence of chemical and climatic stimuli upon developing forms. Hunter.

105.—ADVANCED TAXONOMY OF INSECTS. Five hours credit. Throughout the year, by appointment. Fee, \$1. Hunter.

151.—MORPHOLOGY OF INSECTS. Three hours credit. First semester, 10:30 to 12:30. Fee, \$1.50. Young.

152.—SYSTEMATIC ENTOMOLOGY I. Two hours credit. First or second semester, 1:30 to 3:30. Fee, \$1. Hungerford.

153.—BIOLOGY OF THE ARTHROPODS. Two hours credit. Second semester, 10:30 to 12:30; first semester, 3:30 to 5:30. Fee, \$1. Hungerford.

154.—ADVANCED MORPHOLOGY OF INSECTS. Five hours credit. Throughout the year, by appointment. Fee, \$1.50. Hunter.

155.—TAXONOMY OF INSECTS. Three hours credit. First or second semester, by appointment. Fee, \$1. Hungerford.

156.—APPLIED ENTOMOLOGY. Two hours credit. First semester, 11:30 to 12:30. Fee, \$1. Hungerford.

157.—APPLIED ENTOMOLOGY II. Two hours credit. Second semester, 8:30 to 9:30. Hungerford.

158.—MEDICAL ENTOMOLOGY. Two hours credit. First semester, 10:30 to 11:30. Hunter.

159.—TEACHERS' COURSE. Three hours credit. Second semester, by appointment. Hungerford.

160.—AGRICULTURE. Two hours credit. First semester, 8:30 to 9:30. Hungerford. (Fall, 1916, Shull.)

FINE ARTS.

Professor BUTLER.
 Professor SKILTON.
 Professor PREYER.
 Professor DOWNING.
 Professor GRIFFITH.

PIANO. Five hours credit. Each semester, by appointment. Etudes of Phillipp, Liszt, MacDowell and others; transcriptions of Bach's organ fugues by Liszt, Tausig, Busoni; modern concert pieces and concertos. Open only to graduates of the artists' course or of other schools requiring a corresponding amount of work. Applicants for admission must play before the Fine Arts Faculty not less than three concert numbers, including a movement of a sonata or concerto, and give a public recital on completion of the course. Preyer.

ORGAN. Five hours credit. Each semester, by appointment. Greater preludes and fugues and chorale preludes of Bach, of modern German, French, English, and American masters. Oratorio accompaniment and playing with orchestra. This course is subject to the same conditions as Piano. Skilton.

OPERA AND ORATORIO. Five hours credit. By appointment. Practical and critical study of the development of opera and oratorio, the practical work consisting of one hour a week of vocal study of selected numbers; the theoretical work of two hours' critical examination of complete works. Open only to graduates of the voice department or of other schools requiring a corresponding amount of work. Applicants for admission must sing before the Music Faculty not less than three concert numbers, including an aria, and give a public recital on completion of the course. Butler, Downing, and Skilton.

COMPOSITION. Five hours credit. By appointment. Original composition in large forms, suite sonata, overture, cantata, concerto. Open to graduates of the music department or of other schools requiring a corresponding amount of work. Applicants must present original compositions in the smaller forms which show evidences of talent and mastery of material. Preyer or Skilton.

DESIGN. Five hours credit. Each semester. Advanced designing, calling for the completion of an original painting containing not less than three figures. Shortest dimensions of the canvas to be not less than three feet. Open to graduates of the School of Fine Arts or of other schools of equal standing. Griffith.

GEOLOGY AND MINERALOGY.

Professor HAWORTH.
Associate Professor TWENHOFEL.
Assistant Professor TODD.

A graduate student who has completed a fairly good course in geology and mineralogy, and a term or two in surveying, metallurgy, and ore dressing, is well prepared to begin on the following graduate courses.

GEOLOGY.

100.—GEOLOGIC METHODS, SECTIONS, PLANE-TABLE WORK, ETC. Five hours credit. First semester, at 1:30. Early in his graduate course the student should become familiar with methods of investigation and reporting followed by the leading geologists of the world, partly in order to prepare himself to conduct original investigations, and also to be able to understand and appreciate the voluminous reports of original investigations with which he will be brought in contact. Prerequisites, undergraduate geology 1, 50, 52, and 53, or their equivalents. Haworth.

101.—GEOLOGIC METHODS, SECTIONS, ETC. Five hours credit. Second semester, at 1:30. A continuation of 100. Haworth.

102.—GEOLOGY OF NONMETALS, PRINCIPALLY COALS. Five hours credit. First semester, at 2:30. The object of this course is to study in detail the coal fields of the world, including their geology, geography and commerce, and approved methods of field investigation. Prerequisites, undergraduate geology 1, 50, 52, 53, and 55, or their equivalents. Haworth.

103.—GEOLOGY OF NONMETALS, PRINCIPALLY OIL AND GAS. Five hours credit. Second semester, at 1:30. The industrial world has so completely adapted itself to the uses of oil and gas that it would be calamitous for their production to fail. Consequently, it is important that the geologist be well informed on all phases of their geology, geography, commerce, and technology. Prerequisites, undergraduate geology 1, 50, 52, 53, and 55, or their equivalents. Haworth.

104.—GEOLOGY OF METALS, GENERAL PRINCIPLES OF ORE FORMATIONS, AND THE NOBLE METALS. Five hours credit. First semester, at 3:30. This course and course 105 are intended to constitute a year's study in the geology of metals. At the outset a thorough study of the origin of ore deposits will be made, in which the writings of the best authorities available will be used. It is presumed that this general study may be completed in time to make a somewhat detailed study of the noble metals by the end of the term. Prerequisites, undergraduate geology 1, 50, 52, 53, and 54. Haworth.

105.—GEOLOGY OF METALS. Five hours credit. Second semester, at 3:30. A continuation of 104. Prerequisites as for 104. Haworth.

106.—HISTORY, GEOLOGY, AND COMMERCE OF MINING. Five hours credit. Second semester, at 2:30. It is considered well worth while to devote one semester to a study of general mining, in which will be traced the centuries of mining history, in order that the practical man may have the assistance of all past experience to aid him in his profession. Prerequisites, a sufficiently extended study to assure an appreciation of the subject.

107.—EXPERT EXAMINATION OF PROPERTIES. Five hours credit. Second semester, by appointment. This course is given expressly to prepare the student for making expert examinations of properties covering all classes of mines, and producing a report on same prepared in the most approved manner. It will require much reading and consideration of various well-known mining properties, and a specific examination and report upon some particular property. Prerequisites, substantially all the preceding courses herein listed.

108.—DISSERTATION. Eight hours credit. Each semester. These two courses are a culmination of an extended graduate course in geology, and lead to the degree of doctor of philosophy. By the close of the preceding year the subject should be chosen, and at least a part of the field work should be done during the summer vacation. A specific area will be chosen for this purpose, and the student will be expected to make a complete survey and prepare a correct and elaborate report.

109.—ADVANCED INVERTEBRATE PALEONTOLOGY. Three or five hours credit. First semester. This course is an amplification of course 57 in the College. The entire collection of fossil invertebrates is placed in the student's hands for study. Emphasis is laid on the examination of original papers; and, as many of these are in German and French, the ability to read these languages is essential. Twenhofel.

110.—ADVANCED STRATIGRAPHY. Three or five hours credit. Second semester. In this course a detailed study is made of the earth's stratigraphy as revealed by paleontology. Original papers are studied and the formations and deposits of different regions are compared. Twenhofel.

111.—SUMMER FIELD WORK. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Haworth.

152 and 153.—STRUCTURAL AND DYNAMIC GEOLOGY.

154 and 155.—ECONOMIC GEOLOGY.

156.—PHYSIOGRAPHY.

157 and 158.—INVERTEBRATE PALEONTOLOGY.

MINERALOGY.

112.—ADVANCED AND ORIGINAL WORK IN MINERALOGY. Three, five or ten hours credit. Both semesters, by appointment. This course may be chosen by graduate students who have completed courses 1, 50 and 51 in the College and who wish to specialize in the subject of mineralogy. Haworth and Todd.

113.—ADVANCED AND ORIGINAL WORK IN PETROGRAPHY. Three, five or ten hours credit. Both semesters, by appointment. This course may be chosen by graduate students who have completed courses 51, 52 and 53 in the College, and who wish to specialize in the subject of petrography. Haworth.

160.—SYSTEMATIC MINERALOGY.

161.—PETROGRAPHY.

GERMANIC LANGUAGES AND LITERATURES.

Professor ENGEL.

Professor THURNAU.

Associate Professor CORBIN.

Associate Professor KRUSE.

Assistant Professor STURTEVANT.

Mr. PALMBLAD.

100.—HISTORY OF THE GERMAN LANGUAGE. Two hours credit. Second semester, by appointment. Introduction to philological study. Wright's History of the German Language, vol. I, and supplementary reading. Lectures and library work. Palmblad.

101.—GOTHIC. Two hours credit, first semester, and two hours, second semester, at 9:30. Braune's Gothic Grammar; Heyne's Ulfilas. Phonetics, grammar, and translation. Sturtevant.

102.—OLD NORSE. Two hours credit, first semester; and two hours, second semester, by appointment. Noreen's *Altnordische Grammatik*; Holt-hausen's *Altisländisches Lesebuch*; *The Elder Edda*. Sturtevant.

103.—GERMANIC MYTHOLOGY. Two hours credit. First semester, at 9:30. Kruse.

104.—OLD HIGH GERMAN. Two hours credit. First semester, by appointment. Braune's *Althochdeutsche Grammatik und Lesebuch*. Sturtevant.

105.—OLD SAXON. Two hours credit. Second semester. Sturtevant.

106.—MIDDLE HIGH GERMAN. Two hours credit, first semester, and two hours, second semester, by appointment. Paul's *Mittelhochdeutsche Grammatik*; Hartmann, *Der Arme Heinrich*; *Nibelungenlied*. Selections from Walther von der Vogelweide. Engel.

107.—SEMINAR IN GERMAN LITERATURE. Two hours credit, first semester, and two hours, second semester, by appointment. The subject for study in 1916-'17 will be Goethe. Thurnau.

108.—THE ROMANTIC SCHOOL. Two hours credit, first semester, and two hours, second semester, by appointment. Early Romantic school, first semester, and later Romantic school, second semester. Lectures on the Romantic movement, library reading, and reports. Corbin.

109.—SPECIAL STUDIES IN HEBBEL. Two hours credit. Second semester, by appointment. Kruse.

112.—HISTORY OF GERMAN PROSE FICTION. Three hours credit. Second semester, at 10:30. Lectures and selected readings. Special emphasis on the growth of realism in the nineteenth century. Thurnau.

113.—THE LYRICS OF GOETHE. Two hours credit. First semester, at 8:30. Study of the lyrics in connection with the life and letters of the author. Corbin.

114.—THE REALISTIC DRAMA. Three hours credit. First semester, at 8:30. A brief consideration of the development of the German drama, followed by a more intensive study of the dramas of Hebbel, Ludwig, and Anzengruber. Lectures, readings, and reports. Kruse.

115.—THE NATURALISTIC DRAMA. Two hours credit. Second semester, at 8:30. Hauptmann, Sudermann, and Halbe. Lectures, readings, and reports. Should be preceded by course 114. Kruse.

116.—THE ROMANTIC DRAMA. Two hours credit. Second semester, at 8:30. Heinrich von Kleist, Grillparzer, and Wagner. Lectures readings, and reports. This course alternates with course 115. Kruse.

117.—STORM AND STRESS. Three hours credit. First semester, at 9:30. Special study of the writings of Goethe and Schiller in this period, with lectures and library reading in the lesser writers and the literary movement as a whole. Engel.

118.—MODERN SWEDISH. Two hours credit, first semester; and three hours, second semester, by appointment. Fort's *Elementary Swedish Grammar*, Hildebrand's *Läsebok*; Esaias Tegnér's *Fritiofssaga* and *Nattwardsbarnen*. Sturtevant. (Not given in 1916-'17.)

119.—MODERN NORWEGIAN. Two hours credit, first semester, and three hours, second semester, by appointment. Olsen's *Grammar and Reader*, and selected texts. Sturtevant.

120.—TEACHERS' COURSE. Three hours credit. Second semester. Review of special topics in grammar and syntax, with composition and practical illustrative exercises based on Thomas' *German Grammar*, some study and drill in elementary practical phonetics, and a comparison and discussion of different methods in teaching beginning German. Intended especially for those who expect to teach German in high schools. Open only to the best students of the department. Engel. (See *School of Education*.)

GREEK.

Professor WILCOX.
Associate Professor STERLING.
Assistant Professor BRANDT.

153.—HOMER'S ILIAD. Three hours credit. First semester, at 11:30, or by appointment. Reading of the whole book in the original, with critical study of select portions. Study of the Epic and Homeric life and times. Wilcox. (Not given in 1916-'17.)

154.—PLATO'S GORGIAS OR REPUBLIC. Three hours credit. Second semester, at 2:30, or by appointment. Outside reading of other dialogs of Plato. Study of the life and thought of his time. Wilcox. (Not given in 1916-'17.)

155.—LYRIC POETRY. Two hours credit. First semester, at 3:30, or by appointment. Selections from Elegiac, Iambic, and Melic poetry. Wilcox. (Not given in 1916-'17.)

156.—GREEK COMEDY. Two hours credit. Second semester, at 11:30, or by appointment. The Clouds and Frogs of Aristophanes. Study of the origin and development, form and content of Greek comedy. Wilcox. (Not given in 1916-'17.)

157.—HOMER'S ODYSSEY. Three hours credit. First semester, at 11:30, or by appointment. Reading of the whole book in the original, with critical study of select portions. Wilcox.

158.—ALEXANDRIAN LITERATURE. Three hours credit. Second semester, at 2:30, or by appointment. Theocritus, Appollonius Rhodius, and the Anthology. Study of Pastoral Poetry and the late Epic, and their influence on Latin and later poetry. Wilcox.

159.—THUCYDIDES. Two hours credit. First semester, at 2:30, or by appointment. Reading of as much as possible in the original and the rest in translation. Studies in his style and historical method compared with Herodotus and later and modern historians. Wilcox.

160.—ARISTOTLE. Two hours credit. Second semester, at 11:30, or by appointment. The Poetics and selections from the Politics and Ethics. Study of Aristotle's place in the history of thought. Wilcox.

The following courses may be taken as minors:

161.—THE GREEK IN ENGLISH. Three hours credit. First semester, at 8:30. A study of English etymology, with especial reference to Greek. Only so much Greek is studied as is necessary for the end in view. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

165.—GREEK POETRY IN TRANSLATIONS. Three hours credit. First semester, at 8:30. The Epic and Lyric poetry of the Classic and Alexandrian ages. Study of form and content and influence on later poetry. Wilcox.

166.—THE GREEK DRAMA IN TRANSLATIONS. Two hours credit. Second semester, at 2:30. Ten to twelve dramas of Æschylus, Sophocles, Euripides, and Aristophanes are read and discussed from the points of view of form and content and influence on later and modern dramas. Wilcox.

168.—GREEK PROSE MASTERPIECES IN TRANSLATIONS. Three hours credit. Second semester, at 2:30. Study of the form and content and influence of the principal works of the historians, orators, and philosophers, especially Herodotus, Thucydides, Demosthenes, and Plato. Sterling.

169.—GREEK ARCHITECTURE. Two hours credit. First semester, at 11:30. This course includes the fundamental principles of all styles, with special reference to the survivals and revivals of Greek elements. The re-

sult ought to be a knowledge of all historic styles, and not simply the Greek. Wilcox.

170.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester, at 11:30. This course includes, for purposes of comparison and appreciation, a summary view of the sculpture and painting of later and modern times. Wilcox.

HISTORY AND POLITICAL SCIENCE.

Professor HODDER.
 Professor BECKER.
 Associate Professor PATTERSON.
 Associate Professor DYKSTRA.
 Associate Professor CRAWFORD.
 Associate Professor DAVIS.
 Assistant Professor MOORE.

HISTORY.

100 and 101.—SEMINAR IN EUROPEAN HISTORY. Three or five hours credit. First and second semesters, hours by appointment. A study of the sources in some restricted field and the preparation of papers based upon them. Designed to give practical experience in historical investigation. Becker.

102 and 103.—SEMINAR IN AMERICAN HISTORY. Three or five hours credit. First and second semesters, hours by appointment. Practice work with source material. The subjects for investigation will be taken from the history of the trans-Missouri West. Hodder.

POLITICAL SCIENCE.

104 and 105.—SEMINAR IN POLITICAL SCIENCE. Three hours credit. First and second semesters, hours by appointment. Individual investigation under the direction of the instructor. The topics will be in the field of American political parties and party reform. Dykstra.

106.—POLITICAL THEORIES. Two hours credit. Second semester, at 9:30. A brief review of ancient and mediæval political philosophy, followed by a study of modern English and continental political theories. Dykstra.

HISTORY.

150.—GREEK HISTORY. Two hours credit. First semester, at 10:30. Patterson.

151.—ROMAN HISTORY. Two hours credit. Second semester, at 10:30. Patterson.

153.—MEDIÆVAL INSTITUTIONS. Two hours credit. First semester, at 9:30. Patterson.

155.—PROTESTANT REVOLT. Two hours credit. Second semester, at 9:30. Patterson.

158 and 159.—HISTORY OF THE COMMON LAW. Two hours credit. First and second semesters, at 8:30. Crawford.

160 and 161.—FRENCH REVOLUTION. Two hours credit. First and second semesters, at 1:30.

162 and 163.—HISTORY OF THE NINETEENTH CENTURY. Three hours credit. First and second semesters, at 2:30.

164.—AMERICAN COLONIAL HISTORY. Three hours credit. First semester, at 2:30. Hodder.

165.—AMERICAN REVOLUTION. Three hours credit. Second semester, at 2:30. Hodder.

166 and 167.—PRESIDENTIAL ADMINISTRATIONS. Five hours credit. First and second semesters, at 3:30. Hodder.

POLITICAL SCIENCE.

180.—PRINCIPLES OF POLITICAL SCIENCE. Three hours credit. First semester, at 9:30. Dykstra.

181.—EUROPEAN GOVERNMENT. Three hours credit. First semester, at 11:30. Davis.

182.—AMERICAN CONSTITUTIONAL LAW. Two hours credit. Second semester, at 2:30. Hodder.

183.—INTERNATIONAL LAW. Three hours credit. First semester, at 10:30. Moore.

184.—MUNICIPAL GOVERNMENT. Three hours credit. Second semester, at 9:30. Dykstra.

185.—CONTEMPORARY DIPLOMACY. Three hours credit. Second semester, at 11:30. Davis.

186.—POLITICAL PARTIES. Two hours credit. First semester, at 11:30. Dykstra.

187.—STATE GOVERNMENT. Two hours credit. Second semester, at 11:30. Dykstra.

188.—ELEMENTARY LAW. Three hours credit. Second semester, at 10:30. Moore.

HOME ECONOMICS.

Professor SPRAGUE.
Instructor DOWNEY.

100.—RESEARCH COURSE. Five or ten hours credit. Either semester, by appointment. Fee, \$1 per hour. This course should run through the year to gain ten hours credit. Original investigation of some unsolved problem relating to the home. Open to graduate students who have sufficient preparation. Sprague.

101.—SEMINAR. Three hours credit. Second semester, by appointment. Discussion of and reports on current literature relating to home economics. The full presentation of some subject will be required. Sprague.

151.—DIETETICS. Five hours credit. Second semester, at 10:30. Fee, \$2.50. Downey.

152.—SPECIAL PROBLEMS IN HOME ECONOMICS I. Three or five hours credit. First semester. Fee, \$1 per hour. Sprague.

153.—SPECIAL PROBLEMS IN HOME ECONOMICS II. Three or five hours credit. Second semester. Fee, \$1 per hour. A continuation of course 152. Sprague.

JOURNALISM.

Professor THORPE.
Associate Professor FLINT.

100.—SEMINAR. Three to five hours credit. Either semester, by appointment. A research course for mature students having the necessary preparation and ability to undertake a definite line of original investigation under the direction of instructors.

151.—THE SHORT STORY I. Three hours credit. First semester, at 8:30. Thorpe.

152.—THE SHORT STORY II. Three hours credit. Second semester, at 8:30. A continuation of course 151. Thorpe.

153.—INTERPRETATION OF THE NEWS. Two hours credit. First semester, at 10:30. Flint.

154.—INTERPRETATION OF THE NEWS II. Two hours credit. Second semester, at 10:30. Flint.

155.—ADVERTISING I. Three hours credit. First semester, at 11:30. Flint.

156.—ADVERTISING II. Three hours credit. Second semester, at 11:30. A continuation of course 155. Flint.

159.—EDITORIAL PROBLEMS AND POLICIES I. Three hours credit. First semester, by appointment. Thorpe.

160.—EDITORIAL PROBLEMS AND POLICIES II. Three hours credit. Second semester, by appointment. A continuation of course 159. Thorpe.

LATIN LANGUAGE AND LITERATURE.

Professor WALKER.
Associate Professor OLIVER.
Associate Professor MURRAY.
Assistant Professor CRESSMAN.

100.—THE TOPOGRAPHY OF ROME. Two hours credit. Second semester, at 8:30. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present written reports on subjects investigated by himself. Oliver.

101.—INVESTIGATION IN ROMAN POLITICAL INSTITUTIONS. Two to five hours credit. First or second semester, by appointment. Given only after or in connection with course 159. This course will be conducted by additional lectures, and by additional investigations by members of the course. The master's thesis may be worked up in connection with this course. Murray.

102.—LATIN EPIGRAPHY. Three hours credit. Second semester, at 9:30. This course has as its object an acquaintance with the forms and subject matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional, and economic history, and to other fields. Murray.

103.—INVESTIGATION IN LATIN EPIGRAPHY. Two to five hours credit. By appointment. Given only in connection with course 102. Additional investigation of special topics will be expected of members of the course. Murray.

104.—ELEMENTARY SANSKRIT. Three hours credit. Second semester, at 10:30. Cressman.

105.—COMPARATIVE GRAMMAR (sounds and inflections). Three hours credit. First semester, at 2:30. Cressman.

106.—SEMINAR IN SYNTAX. Three or five hours credit. First semester, at 11:30. Walker.

107.—SEMINAR (continued). Three or five hours credit. Second semester, at 2:30. A subject for the thesis required of all candidates for the degree of master of arts is expected to present itself in the course of the work, and in the second term a portion of the time may be devoted to the working up of that subject. Walker.

150.—ADVANCED LATIN COMPOSITION. Two hours credit. First semester, at 1:30. Walker.

151.—PLAUTUS. Two hours credit. First semester, at 10:30. Murray.

152.—VERGIL'S ECLOGUES AND GEORGICS. Two hours credit. Second semester, at 1:30. Walker.

153.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours credit. (Not given in 1916-'17.)

154.—PLINY'S LETTERS. Two hours credit. (Not given in 1916-'17.)

155.—LUCRETIVS. Three hours credit. (Not given in 1916-'17.)

156.—THE ANNALS OF TACITUS. Three hours credit. Second semester, at 8:30. Murray.

157.—JUVENAL. Three hours credit. (Not given in 1916-'17.)

153.—LITERATURE OF THE EMPIRE. Three hours credit. First semester, at 8:30. Oliver.

159.—ROMAN POLITICAL INSTITUTIONS. Three hours credit. First semester, at 1:30. Murray.

160.—CÆSAR'S GALLIC CAMPAIGNS. Three hours credit. Second semester, at 1:30. Walker.

161.—VERGIL. Three hours credit. (Not given in 1916-'17.)

162.—TEACHERS' COURSE IN LATIN. Two hours credit. First semester, at 2:30. Walker.

LAW.

Professor GREEN.
Professor BURDICK.
Professor HIGGINS.
Professor OSBORN.
Professor HUMBLE.

100.—CONSTITUTIONAL LAW. Five hours credit. Daily, second semester, at 11:30. General principles governing constitutions; the United States and the states; establishment and amendment of constitutions; construction and interpretation; departmental powers; police power; eminent domain; taxation; civil rights; constitutional guaranties; laws impairing the obligation of contracts, retroactive laws. Green.

101.—COMMON-LAW PLEADING. Two and one-half hours credit. Daily, first half of first semester, at 8:30. An analytical and historical study of the law of remedies at common law, including ancient modes of trial; special topics assigned, such as assumpsit, trover, trespass, for historical investigation of the development of the law of contracts and of torts. Higgins.

102.—JURISPRUDENCE. Two and one-half hours credit. Daily, first half of first semester, at 11:30. An analytical study of the elements of jurisprudence, viz.: the science of human relations regulated by positive law; the theories of the state, sovereignty and government; an historical examination of the systems of English and American common law and equity. Humble.

103.—ROMAN LAW. One hour a week for twenty-seven weeks, first semester and first half of second semester, at 9:30. Development and extension of Roman law; its revival and present influence; the *corpus juris civilis*; the law of persons, of the family, of property, of servitude, of obligations, of delicts, of inheritance, of procedure, of criminal law, etc. Burdick.

MATHEMATICS.

Professor VAN DER VRIES.
Professor ASHTON.
Associate Professor MITCHELL.
Assistant Professor STOUFFER.
Doctor LEFSCHETZ.

100.—THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. Three hours credit. Throughout the year, by appointment. An introduction to the general theory of functions of a complex variable. Ashton.

101.—THEORY OF FUNCTIONS OF A REAL VARIABLE. Three hours credit. Throughout the year, by appointment. The theory of assemblages, limits, continuity, convergence, derivatives, integrals, etc. Mitchell.

102.—THEORY OF ELLIPTIC FUNCTIONS. Three hours credit, throughout the year. Ashton.

106.—THEORY OF FINITE GROUPS. Two hours credit. Throughout the year, by appointment. The general properties of finite groups which are independent of their mode of representation. Geometric and graphical representations. Mitchell.

110.—THEORY OF CURVES AND SURFACES. Three hours credit. Throughout the year. Van der Vries.

111.—DIFFERENTIAL GEOMETRY. Two hours credit. Throughout the year, by appointment. Applications of the calculus to the theory of curves and surfaces. Mitchell.

112.—ALGEBRAIC INVARIANTS AND COVARIANTS. Three hours credit. Throughout the year, by appointment. An introduction to modern methods in the algebra of invariants and covariants; binary forms, Gordan's theorem, apolarity and rational curves, ternary forms and geometrical applications. Van der Vries.

113.—PROJECTIVE GEOMETRY. Three hours credit. Throughout the year, by appointment. The logical foundations of projective geometry; principle of duality; projective transformations in one-, two- and three-dimensional forms; conic sections; introduction of analytic methods on a synthetic basis. The general projective group and its important subgroups. Mitchell.

114.—FOURIER'S SERIES, AND THE POTENTIAL FUNCTION. Three hours credit. Throughout the year, by appointment. Development of functions in Fourier's series, with applications to the solution of problems in physics. Introduction to spherical harmonics. The potential function. Prerequisites, courses 50, 51, 55. Ashton and M. E. Rice.

115.—PROJECTIVE DIFFERENTIAL GEOMETRY. Three hours credit. Throughout the year, by appointment. Elements of Lie's theory; invariants and covariats of linear homogeneous differential equations; projective differential geometry of plane and space curves, ruled surfaces, and curves on ruled surfaces. Stouffer.

120.—CELESTIAL MECHANICS. Three hours credit. Throughout the year, by appointment. Rectilinear motion, central forces, attraction, and potential, the two-body problem, general integrals of the problem of n bodies, the three-body problem, perturbations. Moulton's Celestial Mechanics, and collateral reading. Stouffer.

121.—THEORY OF NUMBERS. Three hours credit. Second semester, by appointment. Divisibility, congruences, primitive roots, quadratic residues, quadratic forms, laws of reciprocity of Legendre-Gauss. Lefschetz.

122.—ABELIAN FUNCTIONS. Three hours credit. Throughout the year, by appointment. Algebraic functions, Riemann surfaces, elements of Abelian integrals. Lefschetz.

150.—ANALYTICAL MECHANICS. Three hours credit. Second semester, 11:30. Wheeler.

151.—DIFFERENTIAL EQUATIONS. Three hours credit. First semester, at 10:30. Stouffer.

152.—ADVANCED CALCULUS I. Three hours credit. First semester, at 9:30. Ashton.

153.—ADVANCED CALCULUS II. Two hours credit. Second semester, at 11:30. Ashton.

155.—HIGHER ALGEBRA I. Two hours credit. First semester, at 9:30. Mitchell.

156.—HIGHER ALGEBRA II. Two hours credit. Second semester, at 9:30. Mitchell.

157.—COMPLEX NUMBERS. Two hours credit. Second semester, at 8:30. Ashton.

158.—GALOIS'S THEORY OF EQUATIONS. Two hours credit. First semester, by appointment. Ashton.

159.—MODERN GEOMETRY I. Three hours credit. First semester, at 8:30. Van der Vries.

160.—MODERN GEOMETRY II. Three hours credit. Second semester, at 8:30. Van der Vries.

162.—HISTORY OF MATHEMATICS. Two hours credit. First semester, at 11:30. Mitchell.

189.—TEACHERS' COURSE. Two hours credit. Second semester. Mitchell.

PHARMACEUTICAL AND BIOLOGICAL CHEMISTRY.

Professor SAYRE.
Professor HAVENHILL.
Associate Professor NELSON.

100.—PHYTOCHEMISTRY (PLANT CHEMISTRY). Five hours credit. First and second semesters. Original investigation and research work on the chemical constituents of plants, dealing especially with such constituents as exert a marked physiological action when introduced into the animal economy. Sayre.

101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year, by appointment. Sayre or Nelson.

102.—BIOCHEMICAL SEMINAR. (For graduates only.) Weekly meetings. Prerequisites, a reading knowledge of French and German. Discussion and reports on current biochemical literature. Nelson.

103.—ANALYSIS OF DRUGS AND DIETETICS. Four hours credit. Either semester. This is a companion course to food analysis (see chemistry 158), and is arranged especially for students who desire to qualify as food and drug analysts. Sayre or Havenhill.

104.—RESEARCH IN PHARMACEUTICAL CHEMISTRY. Two or more hours credit. Throughout the year, by appointment. Havenhill.

150.—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester. A survey of the field of biochemistry. Lectures, conferences, laboratory work. Nelson and assistants.

153.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the application of colloid chemistry to problems in biochemistry. Open to Senior and graduate students. Nelson.

PHILOSOPHY AND PSYCHOLOGY.

Professor TEMPLIN.
Professor HOLLANDS.
Professor OGDEN.
Assistant Professor MITCHELL.
Assistant Professor DOCKERAY.

100.—PHILOSOPHICAL SEMINAR. Five or ten hours credit. First semester, by appointment. Opportunity will be given graduate students to continue in a more exhaustive manner the study of any of the subjects offered in the College courses, and to engage in original investigation. The work will be arranged to suit the special needs of individual students and will be under the immediate supervision of some instructor in the department.

101.—PHILOSOPHICAL SEMINAR. Five or ten hours credit. Second semester, by appointment. A continuation of the preceding course.

102.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours credit. First semester. Opportunity is given graduate students for the advanced study of special topics in psychology. The organization of the seminar will take different forms to meet the needs of its members. Individual study of theoretical questions will be provided for by individual appointment. Group study of theoretical questions will be conducted through weekly meetings.

103.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours credit. Second semester. A continuation of course 102.

104.—MIND AND BODY. Two hours credit. Either semester, by appointment. A study of the relation of consciousness to nervous processes, and the possibility of mind determining bodily activity. Prerequisite, general psychology, physiological psychology, and course 150. Ogden.

150a.—PSYCHOLOGY OF THOUGHT. Three hours credit. First semester. Ogden.

150b.—PSYCHOLOGY OF THOUGHT LABORATORY. Two hours credit. First semester. Ogden.

151.—PRINCIPLES OF PSYCHOLOGY. Three hours credit. Second semester. Ogden.

160.—SOCIAL PSYCHOLOGY. Two hours credit. First semester. Ogden.

161.—ÆSTHETICS. Two hours credit. Second semester. Ogden.

162.—ABNORMAL PSYCHOLOGY. Two hours credit. First semester. Dockeray.

163.—CHILD PSYCHOLOGY. Two hours credit. First semester. Dockeray.

164.—ANIMAL PSYCHOLOGY. Three hours credit. First semester. Dockeray.

168.—ADVANCED PSYCHOLOGY I. Two to five hours credit. First semester. Ogden and Dockeray.

169.—ADVANCED PSYCHOLOGY II. Two to five hours credit. Second semester. Ogden and Dockeray.

170.—HISTORY OF PHILOSOPHY I. Three hours credit. First semester. Hollands.

171.—HISTORY OF PHILOSOPHY II. Three hours credit. Second semester. Hollands.

172.—PHILOSOPHICAL CLASSICS I. Two hours credit. First semester. Mitchell.

173.—PHILOSOPHICAL CLASSICS II. Two hours credit. Second semester. Mitchell.

174.—THEORY OF KNOWLEDGE. Three hours credit. First semester. Hollands.

175.—METAPHYSICS. Three hours credit. Second semester. Hollands.

176.—PHILOSOPHY OF RELIGION. Two hours credit. First semester. Hollands.

177.—ADVANCED LOGIC. Three hours credit. Second semester. Mitchell.

180.—SYSTEMATIC ETHICS. Three hours credit. First semester. Hollands. (Not given in 1916-'17.)

181.—PRACTICAL ETHICS. Two hours credit. Second semester. Hollands. (Not given in 1916-'17.)

PHYSICS AND ASTRONOMY.

Professor KESTER.

Associate Professor M. E. RICE.

Assistant Professor STIMPSON.

Assistant Professor T. T. SMITH.

Assistant Professor STOUFFER.

100.—GRADUATE LABORATORY. Two to five hours credit. Either semester, by appointment. Kester, Rice, and Smith.

101.—THEORETICAL MECHANICS. Three hours credit. Through first and second semesters, by appointment. Lectures, with a problem hour each week. Prerequisites, course 50 or its equivalent, and another course of the same grade. Offered in alternate years. Kester. (Not offered in 1916-'17.)

102.—THEORY OF HEAT AND THERMODYNAMICS. Two hours credit. Through first and second semesters, by appointment. Lectures and problems. A development of Gibbs's ideas of thermodynamic potentials and of equilibrium in systems containing several components in various phases. Prerequisites, courses 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. Kester. (Not offered in 1916-'17.)

103.—THEORY OF ELECTRICITY. Three hours credit. Through first and second semesters, by appointment. Lectures and problems. Prerequisites, course 52 or its equivalent, and another course of the same grade. Offered in alternate years. Kester.

104.—ADVANCED OPTICS. Two hours credit. Through first and second semesters, by appointment. Lectures and problems. A development of the electromagnetic theory of light, of the Abbe theory of optical instruments, etc. Prerequisites, course 51 or its equivalent, and another course of the same grade. Offered in alternate years. T. T. Smith.

Courses 101, 102, 103, and 104 together form a two-year cycle, developing the fundamental parts of physics in a rigorous and detailed manner. Other courses, covering more special (in some cases newer) topics, are listed below.

105.—ELECTRON THEORY. Two hours credit. Throughout the year, by appointment. Theory of electromagnetic mass and of conduction of electricity through metals. Prerequisites, physics 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. Kester. (Not offered in 1916-'17.)

106.—OSCILLATORY ELECTRIC CURRENTS AND ELECTROMAGNETIC WAVES. Three hours credit. Second semester, by appointment. Lectures and problems, giving the principles which underlie wireless telegraphy and telephony. Prerequisites, course 52 or its equivalent, another course of same grade, and some differential equations. Offered in alternate years. M. E. Rice.

107.—RESEARCH AND THESIS. Three to ten hours credit. Either semester. Students who are carrying on original investigations (either experimental or theoretical) in physics will register in this course. Kester, M. E. Rice, and T. T. Smith.

114.—FOURIER'S SERIES AND THE POTENTIAL FUNCTION. Three hours credit. Throughout the year, by appointment. Development of functions in Fourier's series, with application to the solutions of problems in physics. Introduction to spherical harmonics. The potential function, with applications to problems in electricity. Prerequisites, physics 50 or mathematics 50, mathematics 51 and 55, or equivalent. Offered in alternate years. M. E. Rice and Ashton.

150.—MECHANICS AND HEAT. Three hours credit. First semester, at 9:30. Kester.

It is recommended that this course be followed by Mathematics 150, Analytic Mechanics. Three hours.

151.—LIGHT AND RADIANT ENERGY. Three hours credit. Second semester, at 8:30. Offered in alternate years. T. T. Smith. (Not offered in 1916-'17.)

152.—ELECTRICITY. Three hours credit. First semester, at 8:30. M. E. Rice.

153.—CONDUCTION OF ELECTRICITY THROUGH GASES, AND RADIOACTIVITY. Three hours credit. Second semester. Offered in alternate years. Kester.

155.—PHYSICS LABORATORY. Light and radiant energy. Two to five hours credit. By appointment. T. T. Smith.

156.—PHYSICS LABORATORY. Electricity. Two to five hours credit. By appointment. M. E. Rice.

157.—PHYSICS LABORATORY. Gas conduction and radioactivity. Two to five hours credit. By appointment. Kester.

158.—TEMPERATURE CONTROL AND MEASUREMENT. Three hours credit. Second semester, at 8. Offered in alternate years. Kester.

160.—OPTICAL INSTRUMENTS. Three hours credit. Second semester, at 8:30. Offered in alternate years. T. T. Smith.

161.—ALTERNATING CURRENTS. Three hours credit. Second semester, by appointment. Offered in alternate years. M. E. Rice. (Not offered in 1916-'17.)

163.—PHYSICS COLLOQUIUM. One hour credit. Either semester, by appointment.

180.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester. By appointment. Stimpson.

ASTRONOMY.

100.—INTRODUCTION TO CELESTIAL MECHANICS. Three hours credit. Second semester, by appointment. Prerequisites, astronomy 1, physics 5 and 6 or equivalent, analytical geometry, and calculus.

182.—SPHERICAL AND PRACTICAL ASTRONOMY. One lecture and one laboratory period throughout the year, by appointment. Determination of time, use of the sextant, theory of refraction, aberration and eclipses. Students may obtain credit for each semester's work. Prerequisites, descriptive astronomy, trigonometry, and some knowledge of the calculus. Stouffer.

184.—INTRODUCTION TO ASTROPHYSICS. Three hours credit. First semester, by appointment. A study of the principles, methods and instruments employed in investigating the physical condition of celestial bodies. Prerequisites, astronomy 1, physics 5 and 6, and calculus.

185.—THEORETICAL ASTRONOMY. Three hours credit. Second semester, by appointment. Methods of computing the orbits of planets and comets. Prerequisites, astronomy 1, and the calculus.

186.—PRACTICAL WORK IN COMPUTING. Two hours credit. To be taken in conjunction with 185. Two afternoons or six hours per week, second semester.

PHYSIOLOGY.

Professor HYDE.

Assistant Professor REES.

110.—PHYSIOLOGY. Five hours credit. Either semester, 2:30 to 5:30 two days, 2:30 to 3:30 three days. Advanced experimental physiology. Open to graduates and students who have given evidence that they are prepared for it. Recitations and lectures, with demonstrations, conferences and journal club, and laboratory experimental work. Hyde.

111.—PHYSIOLOGY. Five or ten hours credit. Either semester or both, by appointment. Original research, open to graduates who have given evidence that they are prepared for it. Hyde.

112.—SEMINAR OF EXPERIMENTAL PHYSIOLOGY. Two to five hours credit. Either semester, by appointment. A research course for advanced students who are prepared for it. Hyde.

162.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours credit. Either semester or both, by appointment. Hyde.

PHYSIOLOGY AND PHARMACOLOGY.

(Medical.)

Professor MATTHEWS.

100.—GENERAL AND COMPARATIVE PHYSIOLOGY. Five hours credit. A study of the phenomena of irritability, or the response of living organisms to their environments. Prerequisites, embryology, histology, and neurology.

101.—RESEARCH WORK IN PHYSIOLOGY AND PHARMACOLOGY. Five hours credit. Each semester.

150.—PHYSIOLOGY OF THE BLOOD, RESPIRATION, MUSCLE AND SECRETIONS. Five hours credit. First semester. Prerequisites, the same as for course 100, with the addition of physiological chemistry.

151.—PHYSIOLOGY OF THE NERVOUS SYSTEM AND THE SENSE ORGANS. Three hours credit. Second semester.

152.—THE PHYSIOLOGICAL ACTION OF CHEMICAL SUBSTANCES (Experimental Pharmacology). Three hours credit. Second semester.

ROMANCE LANGUAGES AND LITERATURES.

Professor GALLOO.
Associate Professor NEUENSCHWANDER.
Associate Professor OWEN.
Assistant Professor COWPER.
Assistant Professor SKIDMORE.
Miss STANTON.

FRENCH.

100.—OLD FRENCH. Three hours credit. First semester, by appointment. Phonology and morphology of old French, with some discussion of syntax. *Le Pèlerinage de Charlemagne à Jérusalem*; Aucassin et Nicolette. Must be preceded by courses 162 and 163 or their equivalents. Galloo.

101.—HISTORY OF THE FRENCH LANGUAGE. Three hours credit. Second semester, by appointment. Its rise from Low Latin; the additions from other sources; its growth and modifications. Galloo.

102.—PROVENÇAL. Two hours credit. First semester, by appointment. Grandgent's *Provençal Phonology and Morphology*, Appel's *Provenzalische Chrestomathie* and Schultz-Gora's *Altprovenzalisches Elementarbuch*. NeuenSchwander.

103.—PROVENÇAL. Two hours credit. Second semester, by appointment. A continuation of course 102. NeuenSchwander.

104.—MEDIÆVAL FRENCH LITERATURE. Three hours credit. Second semester, by appointment. From the first literary monuments to the Renaissance. Galloo.

105.—FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Two hours credit. First semester, by appointment. The Renaissance in French literature. The beginnings of classicism. The *Pléiade*. Galloo.

106.—MOLIERE. Three hours credit. First semester, by appointment. Same as course 10, with additional requirements. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French. Galloo.

107.—THE LITERARY MOVEMENT IN THE SECOND HALF OF THE NINETEENTH CENTURY. Three hours credit. Second semester, by appointment. The reaction against romanticism, the Parnassiens, realism and naturalism. The reaction against the scientific spirit, idealism and symbolism. The rise and growth of the new literary criticism. A large amount of reading is required. Reports and an essay in French. Galloo.

108 and 109.—SEMINAR. Five hours credit. Each semester, by appointment. Research course for advanced students, who will be given an opportunity, under the immediate supervision of the department, to carry on investigation in the field of Romance linguistics or literature. Galloo.

150.—THE FRENCH ELEMENT IN ENGLISH. Three hours credit. Second semester, by appointment. NeuenSchwander.

153.—HISTORY OF EARLY FRENCH LITERATURE. Three hours credit. First semester, by appointment. Galloo.

154.—HISTORY OF MODERN FRENCH LITERATURE. Three hours credit. Second semester, by appointment. Stanton.

155.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours credit. First semester, by appointment. Stanton.

156.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. NeuenSchwander.

157.—THE ROMANTIC SCHOOL I. Three hours credit. First semester, by appointment. Galloo.

158.—THE ROMANTIC SCHOOL II. Two hours credit. Second semester, by appointment. Galloo.

159.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours credit. First semester, by appointment. Galloo.

160.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours credit. Second semester, by appointment. Galloo.

161.—THE FRENCH DRAMA. Three hours credit. Second semester, by appointment. Stanton.

162.—OLD FRENCH. Two hours credit. First semester, by appointment. Galloo.

163.—OLD FRENCH. Two hours credit. Second semester, by appointment. Galloo.

188.—TEACHERS' COURSE. Three hours credit. First semester, by appointment. NeuenSchwander.

SPANISH.

120.—EARLY SPANISH. Two hours credit. Second semester, by appointment. Menéndez Pidal's *Manual de gramática histórica española*; *Poema del Cid* (Menéndez Pidal ed.) and *Poema de Fernán González* (Marden ed.). Owen.

173.—DON QUIJOTE. Three hours credit. Second semester, by appointment. Skidmore.

174.—HISTORY OF EARLY SPANISH LITERATURE. Three hours credit. First semester, by appointment. Owen.

175.—HISTORY OF MODERN SPANISH LITERATURE. Three hours credit. Second semester, by appointment. Owen.

176.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours credit. First semester, by appointment. Owen.

177.—THE CLASSIC SPANISH DRAMA. Two hours credit. Second semester, by appointment. Owen.

ITALIAN.

130.—THE ITALIAN THEATER IN THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Lectures and reports. The *Commedia dell'Arte*. Reading of selected comedies of Goldoni and tragedies of Alfieri. Careful study of a few typical works. Prerequisite, course 34, or its equivalent. Cowper.

131.—EARLY ITALIAN. Three hours credit. Second semester, by appointment. Monaci's *Crestomazia italiana*; d'Ancona and Bacci's *Manuale della letteratura italiana*, vol. I; Rossi's *Storia della letteratura italiana*, vol. I. Prerequisite, course 90, or its equivalent. Cowper.

The following course is open to undergraduates also (for description, see College section).

190.—DANTE. Three hours credit. First semester, by appointment. Cowper.

SOCIOLOGY.

Professor BLACKMAR.
Associate Professor HELLEBERG.
Mr. BODENHAFFER.

100.—SEMINAR OF SOCIOLOGY. Two to ten hours credit. Either semester, by appointment. This is a research course for advanced students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student may pursue a definite line of work under the direction of one of the instructors. Helleberg.

101.—SEMINAR OF SOCIAL INVESTIGATION. Two to six hours credit in the Graduate School, by appointment. A research course for advanced students. Applicants for admission to the seminar must satisfy the instructor of their preparation and ability to undertake original investigation. Each student may pursue a special line of social investigation. Blackmar.

102.—AMERICAN AND EUROPEAN CHARITIES. Five hours credit. By appointment. Research course. A study of charities administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions, with special reference to methods of state control. Helleberg.

103.—PREPARATION FOR INSTITUTIONAL AND SOCIAL SERVICE. Five hours credit. Second semester, by appointment. A study of the administration of charitable, penal, and social institutions. A research course in the library is supplemented by investigation of institutions by visitation. Lectures by experienced officials. Preparation for especial positions. Blackmar.

104.—CRIMINOLOGY. Five hours credit. Second semester, by appointment. The modern theories of criminality. Case-study of the life history of criminals. A critical analysis of methods of classification and reformation.

105.—EUGENICS. Three hours credit. Second semester, by appointment. A study of the agencies under social control that may improve or impair racial qualities, either mentally, morally, or physically. Organic evolution, genetics, or heredity is a prerequisite for this course. Zoölogy 4, 64, or 72 would be sufficient. Open to Seniors by special permission of Dean of the College and instructor. Blackmar.

150.—ELEMENTS OF SOCIOLOGY. Two hours credit. Second semester, at 10:30. Blackmar.

151.—PRINCIPLES OF APPLIED SOCIOLOGY. Three hours credit. Second semester, at 1:30. Blackmar.

152.—SOCIAL PATHOLOGY. Two hours credit. First semester, at 1:30. Bodenhafer.

153.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit. Second semester, at 1:30. Bodenhafer.

154.—PUBLIC OPINION. Three hours credit. Second semester, at 2:30. Helleberg.

155.—PSYCHOLOGICAL SOCIOLOGY. Five hours credit. First semester, at 11:30. Helleberg.

156.—THE FAMILY. Two hours credit. Second semester, at 2:30. Helleberg.

157.—SOCIALISM. Two hours credit. First semester, at 2:30. Helleberg.

158.—GENERAL ANTHROPOLOGY. Two hours credit. First semester, at 8:30. Blackmar.

159.—ETHNOLOGY. Two hours credit. Second semester, at 8:30. Blackmar.

160.—RURAL SOCIOLOGY. Two hours credit. Second semester, at 9:30. Bodenhafer.

161.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Three hours credit. First semester, at 2:30. Helleberg.

162.—DEVELOPMENT OF SOCIAL THEORY. Five hours credit. Second semester, at 11:30. Helleberg.

163.—SOCIAL SURVEYS. Two hours credit. First semester, at 11:30. Blackmar.

165.—MUNICIPAL SOCIOLOGY. Two hours credit. First semester, at 9:30.

ZOOLOGY.

Professor ALLEN.
Associate Professor BAUMGARTNER.
Assistant Professor ROBERTSON.
Assistant Professor NOWLIN.
Assistant Professor DOUTHITT.

100.—SEMINAR. Students working for a degree with the major in the department of zoölogy will register in this course for credit in work done in preparation for their theses. Credit will be given only upon a satisfactory presentation of the subject matter of the thesis before the department Faculty.

101.—PROBLEMS IN MORPHOLOGICAL ZOÖLOGY. Five or ten hours credit. Throughout the year. Baumgartner.

102.—PROBLEMS IN SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY. Five or ten hours credit. Throughout the year. Douthitt.

103.—PROBLEMS IN HISTOLOGY AND CELLULAR BIOLOGY. Five or ten hours credit. Throughout the year, by appointment. Baumgartner.

104.—PROBLEMS IN VERTEBRATE PALEONTOLOGY. Five or ten hours credit. Throughout the year, by appointment. Douthitt.

105.—PROBLEMS IN EMBRYOLOGY. Five or ten hours credit. Throughout the year, by appointment. Allen.

106.—PROBLEMS IN GENETICS. Five or ten hours credit. Throughout the year, by appointment. Robertson.

107.—PROBLEMS IN PROTOZOÖLOGY. Five or ten hours credit. Throughout the year, by appointment. Nowlin.

108.—PROBLEMS IN PARASITOLOGY. Five or ten hours credit. Throughout the year, by appointment. Allen.

150.—SYSTEMATIC ZOÖLOGY. Five or ten hours credit. Throughout the year. Allen.

151.—ORNITHOLOGY. Three hours credit. Second semester, T., Th., and by appointment. Students will take up a special problem in connection with this course. Douthitt.

152.—STUDY OF THE MAMMALS. Two hours credit. Second semester, by appointment. Students will take up a special problem in connection with this course. Douthitt.

153.—ANIMAL HISTOLOGY, OR MICROSCOPIC ANATOMY. Five hours credit. First semester, 3:30 to 5:30. Baumgartner.

154.—CYTOLOGY. Five hours credit. Second semester, by appointment. Robertson.

155.—EMBRYOLOGY. Five hours credit. Second semester, by appointment. Allen.

156.—PALEOZOÖLOGY. Five hours credit. Second semester, by appointment. Douthitt.

157.—PARASITOLOGY. Three hours credit. First semester, M. W. F., at 1:30. Allen.

159.—ECONOMIC ORNITHOLOGY AND MAMMALOGY. Five hours credit. Throughout the year by appointment. Douthitt.

171.—PROTOZOÖLOGY. Five hours credit. First semester, by appointment. Nowlin.

172.—GENETICS. Five hours credit. Second semester, by appointment. Robertson.

173.—ZOÖLOGICAL CONFERENCE. One hour credit. Either semester, by appointment. Graduate and advanced undergraduate students meet with the instructors for the discussion of current zoölogical problems. Reports on assigned subjects.



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION III
THE COLLEGE**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 8 p. m.—Organ recital.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.
July 19, Wednesday—Close of first term.
July 20, Thursday—Opening of second term.
August 16, Wednesday—Close of second term.

Academic Year, 1916-'17.

September 11, 12, 13, Monday, Tuesday, Wednesday—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday, inclusive—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday, inclusive—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Topeka.

FACULTY.

FRANK STRONG, Ph. D., President.
OLIN TEMPLIN, A. M., Dean, and Professor of Philosophy.
EPHRAIM MILLER, Ph. D., Emeritus Professor of Mathematics and Astronomy.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.
ALEXANDER M. WILCOX,* Ph. D., Professor of Greek Language and Literature.
LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.
FRANK W. BLACKMAR, Ph. D., Professor of Sociology.
CHARLES G. DUNLAP, Litt. D., Professor of English Literature.
EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
FRANK H. HODDER, Ph. M., Professor of American History and Political Science.
ERASMUS HAWORTH, Ph. D., Professor of Geology.
ARTHUR T. WALKER,† Ph. D., Professor of Latin Language and Literature.
WILLIAM C. STEVENS, M. S., Professor of Botany.
WILLIAM A. GRIFFITH, Professor of Drawing.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
CHARLES S. SKILTON, A. B., Professor of Musical Theory.
IDA H. HYDE, Ph. D., Professor of Physiology.
JAMES NAISMITH, M. D., Professor of Physical Education.
SAMUEL J. HUNTER, A. M., Professor of Entomology.
CARL L. BECKER, Ph. D., Professor of European History.
FREDERICK E. KESTER, Ph. D., Professor of Physics.
HAMILTON P. CADY, Ph. D., Professor of Chemistry.
MERLE THORPE, A. B., Professor of Journalism.
HARRY A. MILLIS, Ph. D., Professor of Economics.
FREDERICK H. BILLINGS, Ph. D., Professor of Bacteriology.
BENNET M. ALLEN, Ph. D., Professor of Zoölogy.
EDMUND H. HOLLANDS, Ph. D., Professor of Philosophy.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
ELMER F. ENGEL, A. M., Professor of German.
JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.
ARTHUR MACMURRAY, A. B., Professor of Public Speaking.
ELIZABETH C. SPRAGUE, Professor of Home Economics.
ROBERT M. OGDEN, Ph. D., Professor of Psychology.
JOHN SUNDWALL, Ph. D., Professor of Anatomy.
SAMUEL A. MATHEWS, M. D., Professor of Physiology.
R. D. O'LEARY, A. B., Professor of English.
ARTHUR J. BOYNTON, A. M., Professor of Economics.
CHARLES H. ASHTON, Ph. D., Professor of Mathematics.
HENRY C. THURNAU, Ph. D., Professor of German.

*On leave of absence, 1915-'16.

†On leave of absence first semester, 1915-'16.

- FREDERICK R. HAMILTON, Ph. B., Director University Extension Division.
 MILES W. STERLING, A. M., Associate Professor of Greek.
 HANNAH OLIVER, A. M., Associate Professor of Latin.
 SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.
 MARTIN E. RICE, M. S., Associate Professor of Physics.
 DAVID L. PATTERSON, B. S., Associate Professor of European History.
 LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.
 CLARENCE A. DYKSTRA, A. B., Associate Professor of History.
 ALBERTA L. CORBIN, Ph. D., Associate Professor of German.
 WILLIAM A. WHITAKER, A. M., Associate Professor of Metallurgy.
 WILLIAM J. BAUMGARTNER, A. M., Associate Professor of Zoölogy.
 HENRY O. KRUSE, A. M., Associate Professor of German.
 LEON N. FLINT, A. B., Associate Professor of Journalism.
 CLARENCE C. CRAWFORD, Ph. D., Associate Professor of European History.
 EARL W. MURRAY, A. B., Associate Professor of Latin.
 WILLIAM S. JOHNSON,* Ph. D., Associate Professor of English Literature.
 WILLIAM H. TWENHOFEL, Ph. D., Associate Professor of Geology.
 VICTOR E. HELLEBERG, A. B., Associate Professor of Sociology.
 DEWITT C. CROISSANT,* Ph. D., Associate Professor of English Language.
 MARGARET LYNN, A. M., Associate Professor of English Literature.
 ELISE NEUENSCHWANDER, Ph. D., Associate Professor of Romance Languages.
 ARTHUR L. OWEN, A. M., Associate Professor of Romance Languages.
 HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.
 WILLIAM W. DAVIS, Ph. D., Associate Professor of American History and Political Science.
 ALICE L. GOETZ, M. D., Associate Professor of Physical Education.
 CHARLES A. SHULL, Ph. D., Associate Professor of Botany.
 ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
 CARL F. NELSON, Ph. D., Associate Professor of Physiological Chemistry.
 GEORGE E. COGHILL, Ph. D., Associate Professor of Anatomy.
 EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
 JAMES E. TODD, A. M., Assistant Professor of Geology and Mineralogy.
 WILLIAM P. WARD,* A. B., Assistant Professor of Romance Languages.
 EDWARD M. BRIGGS, A. M., Assistant Professor of German.
 ALBERT M. STURTEVANT, Ph. D., Assistant Professor of German.
 LULU GARDNER, A. B., Assistant Professor of Rhetoric.
 CALVERT J. WINTER, Ph. B., Assistant Professor of Romance Languages.
 CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry.
 ARTHUR MITCHELL, Ph. D., Assistant Professor of Philosophy.
 FREDERICK A. G. COWPER, A. M., Assistant Professor of Romance Languages.
 GEORGE E. PUTNAM, B. Litt., Assistant Professor of Economics.
 WILLIAM R. B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 NOBLE P. SHERWOOD, A. M., Assistant Professor of Bacteriology.
 THEODORE T. SMITH, A. M., Assistant Professor of Physics.
 FLOYD C. DOCKERAY, Ph. D., Assistant Professor of Psychology.
 HERBERT B. HUNGERFORD, A. M., Assistant Professor of Entomology.
 PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.

*On leave of absence, 1915-'16.

EDMUND D. CRESSMAN, Ph. D., Assistant Professor of Latin.
MARK SKIDMORE, A. M., Assistant Professor of Romance Languages.
WALTER S. LONG, A. M., Assistant Professor of Chemistry.
HOWARD T. HILL, B. S., Assistant Professor of Public Speaking.
NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
HERMAN DOUTHITT, A. M., Assistant Professor of Zoölogy.
MAURICE H. REES, A. M., Assistant Professor of Physiology.
GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
ELLIS B. STOUFFER, Ph. D., Assistant Professor of Mathematics.
WILLIAM M. DUFFUS, A. M., Assistant Professor of Economics.
GRACE CHARLES, Ph. D., Assistant Professor of Botany.
BENJAMIN J. CLAWSON, A. M., Assistant Professor of Bacteriology.
ALBERT C. HODGE, Ph. B., Assistant Professor of Economics and Commerce.
BLAINE F. MOORE, Ph. D., Assistant Professor of Political Science.
JOSEPH G. BRANDT, Ph. D., Assistant Professor of Greek.
JOSEPHINE M. BURNHAM, Ph. D., Assistant Professor of English.
JOHN W. EVANS, A. B., Assistant Professor of Journalism.
LALIA V. WALLING, A. M., Instructor in Physiology.
ESTHER WILSON, A. M., Instructor in German.
MAY GARDNER, A. B., Instructor in Romance Languages.
ALICE WINSTON, A. M., Instructor in Rhetoric.
MARIA L. BENSON, A. B., Instructor in Design and Ceramics.
ROSE R. MORGAN, A. M., Instructor in Rhetoric.
AMIDA STANTON, A. M., Instructor in Romance Languages.
HELEN G. JONES, Ph. B., Instructor in German.
JOHN J. WHEELER, A. M., Instructor in Mathematics.
HOMER O. LICHTENWALTER, B. S., Instructor in Chemistry.
HEARTY E. BROWN, A. M., Instructor in Rhetoric.
EMMA PALMER, A. M., Instructor in German.
SARA G. LAIRD, A. M., Instructor in Rhetoric.
JOHN B. WHELAN, A. M., Instructor in Chemistry.
EVANGELINE DOWNEY, A. M., Instructor in Home Economics.
HELEN R. HOOPES, A. M., Instructor in Rhetoric.
CAROLINE B. SPANGLER, A. B., Instructor in German.
WILLARD A. WATTLES, A. M., Instructor in Rhetoric.
ESTHER L. SWENSON, A. M., Instructor in Rhetoric.
CHARLES B. DRAKE, * A. B., Instructor in Romance Languages.
HARRY LORENZ, Instructor in Physical Education.
HARRY V. E. PALMBLAD, A. M., Instructor in German.
MARGARETHE C. HOCHDÖRFER, A. M., Instructor in German.
IVAN P. PARKHURST, B. S., Instructor in Chemistry.
WINFRED W. HAWKINS, A. M., Instructor in German.
HAZEL K. ALLEN, Ph. B., Instructor in Home Economics.
ARTHUR W. LARSEN, A. M., Instructor in Mathematics.
HERBERT FLINT, A. B., Instructor in Rhetoric.
HAZEL H. PRATT, A. B., Instructor in Physical Education.
LEONARD L. STEIMLEY, A. M., Instructor in Mathematics.
LAURENS E. WHITTEMORE, A. M., Instructor in Physics.
KARL J. HOLZINGER, A. B., Instructor in Mathematics.

OSCAR L. MAAG, B. S., Instructor in Chemistry.
 CLIFFORD W. SEIBEL, B. S., Instructor in Chemistry.
 PERCY B. SHOSTAC, A. B., Instructor in Rhetoric.
 AVIS GWINN, A. B., Instructor in Home Economics.
 GLADYS E. ELLIOTT, A. B., Instructor in Physical Education.
 WALTER B. BODENHAFFER, A. M., Instructor in Sociology.
 INGEBRIGT LILLEHEI, * Ph. D., Instructor in Romance Languages.
 PETER A. F. APPELBOOM, † Instructor in Romance Languages.
 CARL M. MELOM, † Instructor in Romance Languages.
 LARRY M. PEACE, A. M., Preparator and Demonstrator in the Botanical
 Laboratory.
 RUBY C. HOSFORD, A. M., Laboratory Assistant in Entomology.
 WILLIAM B. BROWN, Assistant Instructor in Journalism.
 KATE SEARS, Assistant Instructor in Botany.
 AULEY MCAULEY, * A. B., Assistant Instructor in Chemistry.
 WENDELL M. LATIMER, A. B., Assistant Instructor in Chemistry.
 RAY Q. BREWSTER, A. M., Assistant Instructor in Chemistry.
 ERNEST J. BALDWIN, B. S., Assistant Instructor in Chemistry.
 AVIS TALCOTT, A. B., Assistant Instructor in Chemistry.
 EARL C. O'ROKE, A. B., Assistant Instructor in Zoölogy.
 EMILY V. BERGER, † A. B., Assistant Instructor in Chemistry.

ADMINISTRATIVE COMMITTEE.

OLIN TEMPLIN, *Chairman.*

EUGENIE H. GALLOO.
 W. A. WHITAKER.
 F. H. BILLINGS.
 D. L. PATTERSON.

RAPHAEL D. O'LEARY.
 EARL W. MURRAY.
 ARTHUR J. BOYNTON.

*First semester, 1915-'16.

†Second semester, 1915-'16.

The College of Liberal Arts and Sciences.

The College was the first school of the University to be organized. From its opening in 1866 it has offered to its students four years of liberal training, leaving in the main the development of the applied arts and sciences to the professional schools that have grown up around it.

DEGREES.

Graduates of the College who have completed the regular College course are admitted to the degree of *bachelor of arts*, except that, upon request, any candidate who has met the requirements for that degree will be admitted to the degree of *bachelor of science* instead; provided, the larger part of his work has been elected in science departments; and provided, further, his application has the sanction of the department in which his major work has been done. Those who have completed two years of College work and two years in the School of Medicine are admitted to the degree of bachelor of science in medicine.

ADMISSION.

By act of the state legislature all graduates of accredited high schools in Kansas are admitted to the Freshman class without examination or condition.

Candidates for admission who are not graduates of accredited Kansas high schools must offer, either on examination or satisfactory certificate, fifteen units from the following list:

ENGLISH.—Rhetoric and English literature, 3 or 4 units. Three units required.

MATHEMATICS.—Elementary algebra, $1\frac{1}{2}$ units; plane geometry, 1 unit; solid geometry, $\frac{1}{2}$ unit; plane trigonometry, $\frac{1}{2}$ unit; advanced algebra, $\frac{1}{2}$ unit. Elementary algebra and plane geometry are required.

FOREIGN LANGUAGE.—Latin, 1, 2, 3 or 4 units; Greek, 1, 2, 3 or 4 units; German, 1, 2, 3 or 4 units; French 1, 2, 3 or 4 units; Spanish, 1 or 2 units. Three units in one language, or two units in one language and one unit in another, are required.

PHYSICAL SCIENCES.—Physical geography, 1 or $\frac{1}{2}$ unit; physics, 1 unit; chemistry, 1 unit. One unit required.

BIOLOGICAL SCIENCES.—Botany, 1 unit; zoology, 1 unit; physiology, 1 or $\frac{1}{2}$ unit; biological science, 1 unit. One unit required.

HISTORY AND SOCIAL SCIENCE.—Greek and Roman history, 1 unit; medieval and modern history, 1 unit; English history, 1 unit; American history, 1 unit; economics, 1 or $\frac{1}{2}$ unit; civics, $\frac{1}{2}$ unit. One unit required.

MISCELLANEOUS.—Psychology, $\frac{1}{2}$ unit; methods of teaching and school management, $\frac{1}{2}$ unit; commercial law, $\frac{1}{2}$ unit; bookkeeping, $\frac{1}{2}$ unit; drawing, 1 unit; woodwork, 1 unit; forging, 1 unit; domestic science, 1 unit; domestic art, 1 unit; agriculture, $\frac{1}{2}$ or 1 unit; music, 1 unit. Not more than three units are accepted.

Any candidate from another state will be accepted on certificate showing the completion of these requirements, provided the school in which his preparatory work has been done has been accredited by the state university in that state.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examination in the entrance subjects above specified. A schedule of these examinations will be found on page 45 of Section I, "General Information."

Admission to Advanced Standing.

The regulations governing admission to advanced standing are administered by a committee of the University Senate, which examines into the merits of each case presented to it, and either credits the applicant

with a certain rank or recommends him to the heads of the departments for advanced credit or examination.

Application for such advanced standing must be made at the time of matriculation.

Undergraduates from other institutions must present certificates of honorable dismissal, or other satisfactory evidence of good character.

Admission to advanced standing may be secured in either of two ways:

BY EXAMINATION. A candidate may be admitted to the Sophomore, Junior, or Senior class, if he appears on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the curriculum.

All applications for examination for advanced standing must be made during the opening week of the first semester.

College credit for work done in preparatory schools will be given upon examination only, and then only for work done after graduation.

BY CERTIFICATE. Graduates or students from the higher classes of other colleges may be admitted to advanced standing upon presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous study and of the evidence he presents of his proficiency.

AMOUNT OF ADVANCED CREDIT PERMITTED. Not to exceed three years of credit for work done in other institutions will be accepted in satisfaction of the requirements for the degree. At least the last year of thirty hours must be done in residence in the College of Liberal Arts and Sciences in the University of Kansas.

Special Students.

Persons of maturity and of serious purpose, who are not candidates for the College degree and who present satisfactory reasons for asking such exceptional consideration, may be admitted to the College as special students, subject to the provisions stated below:

Any one regularly enrolled in another school of the University may be admitted as a special student to College classes, but all applications for such enrollment must be accompanied by the recommendation of the dean of the school concerned. Such students are subject to the same regulations as other special students.

Each candidate for admission as a special student must personally file with the Faculty Committee an application stating his reasons for his request, and must submit credentials from schools previously attended showing character and extent of preparation for the classes to which he desires admission. He must also submit to such examination as the committee or the departments concerned may prescribe. This application must be renewed each semester.

The Faculty Committee, subject to the approval of instructors or heads of departments concerned, will determine what courses the candidate is prepared to pursue with profit, and will outline his program of studies for the semester. The Registrar will register a special student only upon the authorization of the Faculty Committee.

Special students are subject to the general regulations regarding pre-requisites, number of hours, attendance, examinations, quality of work, etc. Failure in any course, or a low grade in previous work, may be considered sufficient ground for refusal to allow subsequent enrollment as a special student.

If a special student later becomes a candidate for a degree, the credits he has received while enrolled as a special student will not be allowed to count towards this degree, except by the approval of the Faculty.

The Dean may withdraw the privileges of any special student who, in his judgment, is failing to comply with the spirit of the foregoing provisions.

Extension Division Credits.

College students may offer towards the degree not to exceed sixty hours of credit received for work done in the Extension Division, but such credits will not be placed on their College record until thirty hours have been completed in residence.

All regulations governing the election of courses and final residence must have been observed by the candidate for the degree.

REGISTRATION.

All candidates for admission having certificates from schools accredited by the State Board of Education and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 11, 12, 13. *Registration at a later date will be permitted only on the payment of a fee of one dollar.*

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 12 and 13, and on the first day of the second semester. *Enrollment at a later date will be permitted only on the payment of a fee of one dollar.*

Each student is assigned to a member of the Faculty as his personal adviser, who will assist him in the selection of courses, the arrangement of his schedule, and any other matters upon which he may need assistance or advice. The Faculty adviser is the assistant and representative of the Dean of the College, who is charged with the execution of all rules relating to enrollment.

COMPLETION OF REQUIREMENTS. A student may not be enrolled in any subject in advance of any other which, for any reason, he has yet to take, and which is listed in the schedule.

A student desiring enrollment in courses which presuppose certain subjects which he has not completed in the preparatory school must first make good such preliminary training within a high school or under a tutor authorized by the department concerned.

FAILURES AND CONDITIONS. If the record of a student shows that he has failed in a course, or if he has received a condition which has not been removed during the previous semester, he must reënroll in the course, if it is listed in the schedule.

THE CREDIT HOUR.

For each credit hour of any course in the College the student is expected to devote himself for three hours, either in the classroom, laboratory, or outside preparation.

SCHOLARSHIPS.

For information in regard to scholarships and aid funds available for College students, reference is made to page 49 of section I, "General Information."

FEES AND EXPENSES.

For information in regard to fees and expenses, reference is made to page 47, Section I, "General Information." All course fees must be paid before enrollment in classes will be permitted.

THE CURRICULUM.

DEPARTMENTS OFFERING COURSES IN THE COLLEGE.

| <i>Group.</i> | <i>Department.</i> |
|--------------------------------|--|
| I. <i>English.</i> | English Language and Literature. Journalism. Public Speaking. |
| II. <i>Ancient Language.</i> | Greek Language and Literature. Latin Language and Literature. |
| III. <i>Modern Language.</i> | Germanic Languages and Literatures. Romance Languages and Literatures. |
| IV. <i>Mathematics.</i> | Mathematics. |
| V. <i>Physical Science.</i> | Chemistry. Physics and Astronomy. Geology and Mineralogy. |
| VI. <i>Biological Science.</i> | Botany. Zoölogy. Entomology. Physiology. Bacteriology. |
| VII. <i>History.</i> | History and Political Science. Sociology. Economics and Commerce. |
| VIII. <i>Philosophy.</i> | Philosophy and Psychology. |
| IX. <i>Miscellaneous.</i> | Design. Music. Home Economics. Physical Education. |
| X. <i>Professional.</i> | Law (fifteen hours, open to College Seniors). Medicine. (See Medicine under "Description of Courses.") Engineering (fifteen hours, open to College students). Education (fifteen hours, open to College students). Fine arts (fifteen hours, open to College Juniors and Seniors). |

REGULATIONS GOVERNING THE ELECTION OF COURSES.

In the choice of courses from these groups and departments the student must conform to the following regulations:

FRESHMAN-SOPHOMORE REQUIREMENTS. During the first semester every Freshman must attend a weekly lecture on hygiene, and spend three hours a week in the gymnasium. During the second semester he must spend three hours a week in the gymnasium.

During the entire year every Sophomore must spend two hours a week in the gymnasium.

Before the beginning of the Junior year the student must have completed sixty hours, chosen from the list of courses open to Freshmen and Sophomores in accordance with the following requirements:

a. At least five hours must be taken from each of six of the first eight groups.

b. Not more than twenty hours may be taken in one department.

c. Rhetoric, five hours, must be taken by all Freshmen not offering it as a fourth year of entrance English. Credits for rhetoric are given provisionally. (See announcement of course.)

d. Freshmen and Sophomores may not carry more than ten hours in one group at one time.

MAJOR REQUIREMENTS. Before graduation the student must complete a major course of not less than twenty hours nor more than forty hours in one department, and not less than thirty nor more than sixty hours in the group including the major department. At least twelve hours of work in satisfaction of the department major requirements must be in courses not open to Freshmen or Sophomores.

The courses constituting a departmental major must be chosen under the supervision of the Faculty of the department concerned.

In the selection of a major the School of Medicine is considered a department.

FREE ELECTIVES. The work required for graduation not included in the major course is to be chosen subject to the restrictions that not more than twenty-five hours may be in any department, and not more than forty hours may be in any group other than the one in which the major course is elected.

RULE FOR STUDENTS HAVING ADVANCED CREDITS. Students who have been granted advanced credits shall so select their studies that in the one hundred twenty hours offered for the degree the regulations governing the distribution of work shall be satisfied so far as possible; provided, that advanced credit in excess of the maximum prescribed for majors and minors may be granted the candidate at the time of his matriculation. Students admitted to Junior standing with a deficiency must meet the requirements respecting studies of the first two years only to the extent of their deficiency.

AMOUNT OF WORK TO BE CARRIED AT ONE TIME. Students of the College must be enrolled in not less than fourteen nor more than eighteen hours of work including Hygiene and Gymnasium, but all applications for enrollment are subject to the approval of the Dean. When the past record or current work of a student indicates that he is unable to carry advantageously the amount of work permitted by the above regulation, he may be limited in his enrollment to such extent as may be considered advisable in his case. The Faculty urges students to confine themselves to the average number of fifteen hours of class work, and thus devote four full years to the completion of their undergraduate work. Experience has shown that the crowding of the undergraduate courses results in serious loss in the quality of the work accomplished.

DUPLICATION OF COURSES. No course may be chosen which substantially duplicates work for which credit has already been granted, either in the College or preparatory school.

AMOUNT OF WORK REQUIRED FOR GRADUATION. In order to be an applicant for a degree from the College of Liberal Arts and Sciences a student must complete 120 hours of class work, in addition to required hygiene in the Freshman year and required gymnasium work in the Freshman and Sophomore years.

STUDENT'S RESPONSIBILITY. The individual student will be held responsible for the election of his courses in conformity with the preceding regulations.

PROPORTION OF HIGH GRADES REQUIRED FOR THE DEGREE. A student in order to be accepted as a candidate for the degree must have received a grade of I or II in at least eighty hours. Any student admitted to advanced standing will be accepted as a candidate for the degree only in case such student has received on work done in residence the proportion of high grades provided in the foregoing regulation. Any student in residence at the time of the adoption of this regulation will be accepted as a candidate for the degree only in case such student has received on the work done subsequent to its adoption the proportion of high grades provided in the foregoing regulation.

JUNIOR-SENIOR REQUIREMENTS. The work of the Junior and Senior years must include a minimum of sixty hours, chosen from the courses

offered by the various departments, but not more than twenty hours may be in courses open to either Freshmen or Sophomores.

THE LAST THIRTY HOURS MUST BE DONE IN RESIDENCE.

Juniors and Seniors may carry *not more than twelve hours* in one group at one time.

COLLEGE CREDIT FOR PROFESSIONAL COURSES.

Juniors and Seniors in the College are permitted to enroll in certain courses offered in the professional schools and count the credit received for such work towards the bachelor of arts degree, *but no student is permitted to offer credit from more than one professional school.* The amount of credit that may be thus used is subject to the limitations indicated below. Students desiring to avail themselves of this opportunity must register in the professional school as well as in the College, but in enrollment the regulations of the College Faculty governing quantity and character of courses elected must be observed.

SCHOOL OF LAW.—Seniors in the College may offer fifteen hours from the first year of the curriculum of the School of Law.

SCHOOL OF EDUCATION.—Students in the College may elect not to exceed fifteen hours of work in the School of Education.

SCHOOL OF ENGINEERING.—A maximum of fifteen hours may be elected by the College student from courses offered in the School of Engineering.

SCHOOL OF FINE ARTS.—Juniors and Seniors in the College may be enrolled in not to exceed fifteen hours of work in the School of Fine Arts.

SCHOOL OF MEDICINE.—For conditions of election of courses in the School of Medicine, see Medicine under "Description of Courses."

DESCRIPTION OF COURSES.*

ANATOMY.

Professor SUNDWALL.
Associate Professor COGHILL.

1.—INTRODUCTORY ANATOMY. Five hours credit. First semester, 8:30 to 10:30. A course on the structure of the human body especially for those students who are not preparing for medicine. Sundwall.

50.—HUMAN ANATOMY I. Five hours credit. First semester. This course is identical with that of the first semester of the medical curriculum to which reference is made for complete description. Sundwall.

51.—HUMAN ANATOMY II. Five hours credit. Second semester. A continuation of course 1. Sundwall.

54.—HISTOLOGY. Five hours credit. First semester. This course is identical with that of the first semester of the medical curriculum to which reference is made for complete description. Coghill.

55.—NEUROLOGY. Three hours credit. Second semester. This course is identical with that of the medical curriculum to which reference is made for complete description. Coghill.

BACTERIOLOGY.

Professor BILLINGS.
Assistant Professor SHERWOOD.
Assistant Professor CLAWSON.
Assistant Professor YOUNG.

EQUIPMENT. The laboratories are provided with sterilizers, incubators, refrigerators, centrifuges, glassware, etc. A compound microscope with high-power lens, a set of stains, and other equipment are allotted each student. The Water Survey laboratory is equipped for both bacteriological and chemical investigation, and is available to a few well-prepared research students by special arrangement.

ADVICE AS TO CHOICE OF COURSES. Course 1, course 50, or course 51 is a prerequisite for all subsequent courses in bacteriology. Each is directly concerned with the application of bacteriology to human problems. Students who plan to study bacteriology with the expectation of teaching the subject, or of entering a public health laboratory, should complete the following courses in other departments: Inorganic chemistry, qualitative analysis, organic chemistry, chemical analysis of foods, chemical water analysis, quantitative analysis, physiological chemistry, general morphology of plants, plant physiology, elementary zoology, animal histology, parasitology, protozoology, German (15 hours), human anatomy, medical physiology, and pathology.

1.—GENERAL BACTERIOLOGY.* Five hours credit. Both semesters; first semester, two sections, 10:30 to 12:30 and 1:30 to 3:30; second semester, two sections, 8:30 to 10:30 and 10:30 to 12:30. Lectures and laboratory work. The lectures are largely illustrated and treat problems connected with general bacteriology and with the relation of bacteria to public health.

NUMBERS OF COURSES. Courses with numbers from 1 to 49 are open to Freshmen and Sophomores; courses marked with an asterisk () are reserved for Sophomores; courses marked with a double asterisk (**) are required of Freshmen.

Courses with numbers from 50 to 99 are open to Juniors and Seniors on the conditions stated in each case. Many of these courses are also open to graduate students; these are listed under the Graduate School, with numbers increased by 100.

*DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

The laboratory work deals with the preparation of media, cultural and staining methods, diagnostic tests, and the examination of bacteria that bear some relation to everyday life. Prerequisite, chemistry 1 or equivalent. Fee, \$5. Billings, Clawson, and Sherwood.

50.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters, two sections; first semester, 10:30 to 12:30 and 1:30 to 3:30; second semester, 8:30 to 10:30 and 10:30 to 12:30. Open to Juniors and Seniors who have not had course 1. Students who register for this course will be required to do additional laboratory exercises and thus cover more ground than Sophomores. Prerequisite, chemistry 1 or equivalent. Fee, \$5. Billings, Sherwood, and Clawson.

51.—GENERAL BACTERIOLOGY AND WATER ANALYSIS. Five hours credit. First semester, 8:30 to 10:30. The first part of the semester will be devoted to general bacteriological technic, followed by examination of water and sewage. The remainder of the time will be spent in quantitative chemical analysis of water and sewage and in the proper interpretation of sanitary tests. Prerequisite, chemistry 3. Fee, \$3. Young.

53.—BACTERIOLOGY OF FOODS. Three hours credit. Second semester, 1:30 to 3:30. Examination of milk, oysters, meats, etc., with supplementary lectures. Fee, \$3. Clawson.

54.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10:30 to 12:30. The laboratory work embraces the use of special media, the preparation of vaccines, and diagnostic technic, such as that used in public health laboratories. Methods in sanitary examination of water constitute part of the course. Fee, \$5. Sherwood.

55.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1:30 to 3:30. A laboratory study of the influence exerted by bacteria on the composition of soils. Fee, \$2. Clawson.

56.—ADVANCED WATER ANALYSIS. Three hours credit. Second semester, 8:30 to 10:30. Laboratory study and assigned reading. Special attention is given to the bacteriology of water purification. The course will include a study of the organisms that produce water-borne diseases. Fee, \$3. Young.

57.—IMMUNITY. Five hours credit. Second semester, 10:30 to 12:30. Laboratory study of precipitins, agglutinins, bacteriolysins, and complement fixation. Fee, \$5. Sherwood.

60.—BACTERIOLOGICAL JOURNALS. One hour credit. First semester, by appointment. Reviews and discussions of current bacteriological literature. Billings.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Both semesters, by appointment. Special work along some definite line with a view of obtaining familiarity with a particular kind of laboratory procedure. Fee, \$1 for each hour of enrollment. Billings.

BOTANY.

Professor STEVENS.
Associate Professor SHULL.
Assistant Professor CHARLES.
Assistant Professor STERLING.
Mr. PEACE, Preparator and Demonstrator.
Miss SEARS, Assistant Instructor.

EQUIPMENT. The equipment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, and equipment for advanced work in plant physiology, a good herbarium for reference in taxonomy, sets of morphological slides for each student, and abundant morphological material. There is a departmental library adjoining the laboratories.

ADVICE AS TO CHOICE OF COURSES. Courses 1 and 2 are elementary in their respective fields and are without prerequisites. Not more than one of these elementary courses should be taken without consultation with the department. Students who are preparing to teach botany should take

courses 1, 2, 3, 4, 50, 52, 60a, 61, and bacteriology 1. Courses 1 in botany and 1 in bacteriology afford a good basis for sanitation. Courses 3, 60a, and 52 are fundamental to scientific plant culture. Botany 1 and 4 and bacteriology 1 would be especially useful to students in home economics.

1.—GENERAL MORPHOLOGY OF PLANTS. Five hours credit. First semester. Lectures and recitations, Tu. Th., at 10:30. Laboratory, M. W. F., 10:30 to 12:30. A study of plants of the great groups to show the development of the plant kingdom. Fee, \$1. Charles.

2.—THE LIVING PLANT. Five hours credit. Both semesters; first semester, 8:30 to 9:30; second semester, two divisions, 8:30 to 9:30 and 9:30 to 10:30. What plants reveal about the fundamental problems of life, and their relation to our welfare. Lectures, demonstrations, and recitations. Fee, \$1. Stevens.

3.—PLANT PHYSIOLOGY. Five hours credit. Second semester, M. W. F., 10:30 to 12:30; Tu. Th., 11:30 to 12:30. The physiological activities of plants. Intake and outgo of material and energy, photosynthesis, digestion, translocation, storage, assimilation, respiration, excretion, irritability, and tropic responses, etc. Prerequisite, course 1 or its equivalent, or 2. Desirable antecedent, chemistry. Fee, \$1. Shull.

4.—PLANT HISTOLOGY. Two hours credit. First semester, Tu. Th., 10:30 to 12:30. A study of plant tissues with special reference to their development and functions; plant products, their origin and physiological and biological significance; histological technique. Laboratory work, recitations and lectures. Prerequisite, course 1 or its equivalent, or 2. Fee, \$1. Stevens.

50.—SYSTEMATIC BOTANY. Five hours credit. First semester. Lectures and recitations, Tu. Th., at 9:30. Laboratory, M. W. F., 8:30 to 10:30. Field trips Saturday mornings in October. Classification of flowering plants, with field study of local flora, and preparation of an herbarium. Prerequisite, course 1 or 2, or equivalent. Charles.

51.—GENERAL MORPHOLOGY OF PLANTS. Five hours credit. Second semester. Lectures and recitations, Tu. Th., 10:30. Laboratory, M. W. F., 10:30 to 12:30. A survey of the plant kingdom to show its evolution. Fee, \$1. Charles.

52.—PLANT GENETICS. Five hours credit. Second semester, M. W. F., 8:30 to 10:30; Tu. Th., 9:30 to 10:30. The problems of variation, heredity, and the improvement of plants by scientific pedigree methods. Prerequisites, courses 1 or 2, and 3. Desirable antecedent, course 60. Fee, \$1. Shull.

53.—PLANT PHYSICS. Five hours credit. First semester, M. W. F., 1:30 to 3:30; Tu. Th., 2:30 to 3:30. An advanced course dealing with the most recent advances in our knowledge of those phases of the plant's activities which are essentially physical. Prerequisites, courses 1 or 2, and 3, and physics 1 or its equivalent. Desirable antecedent, physics 6a and 6b. Open only to Seniors and graduates. Fee, \$1. Shull.

54.—PLANT CHEMICS. Five hours credit. Second semester, M. W. F., 1:30 to 3:30; Tu. Th., 2:30 to 3:30. An advanced course in vegetable metabolism, dealing with recent advances in the chemistry of plant processes. Prerequisite, course 53 or equivalent. Desirable antecedents, chemistry 2 and 4, and biological chemistry 50. Not open to Juniors. Fee, \$1. Shull.

55.—MORPHOLOGY OF ALGÆ. Three or five hours credit. Second semester, by appointment. An advanced course in the algæ with particular attention to life histories. Prerequisite, course 1 or equivalent. Fee, \$1. Charles.

56.—MORPHOLOGY OF FUNGI. Three hours credit. Second semester, 8:30 to 10:30. Lectures, recitations, and laboratory work on the structure and life histories of fungi, especially those causing plant diseases. Prerequisite, course 1 or equivalent. Fee, \$1. Charles.

57.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three or five hours credit. First semester, 1:30 to 3:30. An advanced course on the development and classification of plants of the groups. Lectures and labo-

ratory work. Prerequisite, course 1 or equivalent. Fee, \$1. Offered first semester, 1917. Charles.

58.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours credit. Both semesters, by appointment. A study of the forms and structures of plant members under different environments. Laboratory work, field work, and reading. Fee, \$1. Stevens.

59.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES AND ARCHEGONIATES. Five hours credit. Both semesters, by appointment. A study of the structure, development, or distribution of plants of these groups. Laboratory, field work, and reading. Prerequisite, course 1 or equivalent, and advanced work in the group to be investigated. Charles.

60.—AGRICULTURE. Three hours credit. First semester, 8:30 to 10:30. A course dealing with the scientific principles underlying plant production and soil management. This course should be taken in conjunction with entomology and zoölogy 72b. Prerequisites, course 3, zoölogy 1, and entomology 1, or their equivalents. Fee, \$1. Shull.

61.—TREES AND SHRUBS. Three hours credit. First semester, M. W. F., 2:30 to 3:30. A study of the nature, planting, and care of the trees and shrubs of especial importance in planting home grounds, streets, and parks. Lectures, reading, and field work. Stevens.

CHEMISTRY.

Professor BAILEY.
 Professor CADY.
 Professor DAINS.
 Associate Professor WHITAKER.
 Associate Professor ALLEN.
 Assistant Professor YOUNG.
 Assistant Professor FARAGHER.
 Assistant Professor STRATTON.
 Assistant Professor LONG.
 Mr. WHELAN, Instructor.
 Mr. LICHTENWALTER, Instructor.
 Mr. PARKHURST, Instructor.
 Mr. MAAG, Instructor.
 Mr. SEIBEL, Instructor.
 Mr. MCAULEY, Assistant Instructor.
 Mr. LATIMER, Assistant Instructor.
 Mr. BREWSTER, Assistant Instructor.
 Mr. BALDWIN, Assistant Instructor.
 Miss TALCOTT, Assistant Instructor.

EQUIPMENT. The department is well supplied with all the necessary and usual apparatus for lecture illustration and demonstration, for laboratory work in the undergraduate courses, together with adequate equipment for effective research work in physical, organic, inorganic, analytical, industrial, and metallurgical chemistry. The liquid-air plant offers somewhat unusual opportunities for investigations at low temperatures.

ADVICE AS TO CHOICE OF COURSES. Students desiring to become professional chemists should select courses 1, 2, 3, 59A or 59B, 54, 61, and 65. The remainder of the possible forty hours in chemistry should be devoted to the subjects which will best fit each student for his chosen work.

Those desiring to teach should select not less than twenty-five hours, which should include courses 1, 2, 3, 59A or 59B, 51 or 52, and 53.

For business or general culture, or as a foundation for work in medicine, botany, zoölogy, geology, mineralogy or physics, at least chemistry 1, 2, and 59A should be studied.

Students majoring in chemistry should have completed ten hours of physics, mathematics through calculus, and elementary courses in German and French.

The department will gladly confer with students majoring in chemistry and advise them as to choice of courses best adapted to individual needs.

FEES will be charged in the various courses to cover cost of materials, breakage, etc.

1.—ELEMENTARY CHEMISTRY. Five hours credit. First semester, 10:30 to 12:20 or 1:30 to 3:30; second semester, 10:20 to 12:30. Recitations,

lectures, and laboratory work. Students presenting chemistry for admission to the College are not admitted to this course. Stratton and assistants.

2.—INORGANIC CHEMISTRY. Five hours credit. First semester. Lectures and recitations, M. W. F., 8:30 or 9:30. Laboratory, Tu. Th., 8:30 to 10:30 or 1:30 to 3:30. Prerequisite, course 1. Cady, Faragher and assistants.

3.—QUALITATIVE ANALYSIS I. Five hours credit. Second semester. Lectures and recitations, Tu. Th., 8:30 to 9:30. Laboratory, M. W. F., 8:30 to 10:30 or 1:30 to 3:30. Prerequisite, course 2. Cady, Faragher and assistants.

4.—ELEMENTARY ORGANIC AND SANITARY CHEMISTRY.* Five hours credit. First semester, 10:30 to 12:30. Open only to students intending to prepare for home economics. Not a substitute for 59A or 59B. Prerequisite, chemistry 1. Bailey.

50.—QUALITATIVE ANALYSIS II. Three hours credit. Second semester, 8:30 to 10:30. An advanced course, especially on the rare metals. Prerequisite, course 3. Cady.

51.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester. A study of the inorganic industries, including such topics as the manufacture of acids, alkalis and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 1, 2, 3. Whitaker.

52.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisites, courses 1, 2, 3, and 59A or 59B. Whitaker and Parkhurst.

53.—CHEMISTRY OF FOOD PRODUCTS. Five hours credit. Second semester, 3:30 to 5:30. This is intended as a general course for any students who are interested in food supply, and includes a study of the source, composition, adulteration, and use of foods. Special attention is also given to the world's supply of foods, and its manufacture and preparation for the market. Prerequisite, course 1. Bailey.

54.—QUANTITATIVE ANALYSIS I. Two, three or five hours credit. First semester, 10:30 to 12:30 or 3:30 to 5:30; or second semester, 10:30 to 12:30 or 1:30 to 3:30. Prerequisite, course 3. Allen and assistants.

55.—QUANTITATIVE ANALYSIS II. Two, three, or five hours credit. Both semesters, 1:30 to 3:30, or by appointment. Prerequisite, course 54. In connection with this work some specialty, such as chemistry of the cement industry, of the glass industry, of the packing-house industry, sugar chemistry, iron analysis, gas analysis, or rock analysis, can be pursued. Allen.

56.—SANITARY WATER ANALYSIS. Five hours credit. Both semesters, 8:30 to 10:30. Part of the course will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the course will be spent in chemical quantitative analysis of water and sewage, and interpretation of results of sanitary tests. Prerequisite, chemistry 3. Young.

57.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours credit. Second semester, 3:30 to 5:30. The three-hour course will cover the fire assay of gold, silver, copper, and other metals. If a student has not taken course 55 he may profitably supplement the fire assaying with two hours' work on the volumetric assay of ore and furnace products. Whitaker.

58.—FOOD ANALYSIS. Two, three or four hours credit. Both semesters, by appointment. Must be preceded by courses 1, 2, 3, 59A or 59B, and 54. Long.

59A.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. Both semesters, 1:30 to 3:30. Designed to cover briefly the aliphatic and aromatic series, to discuss the more important derivatives and to show their relationships and applications. Prerequisite, ten hours chemistry. Dains.

59A.—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit. First semester, M. W. F., at 9:30. Laboratory, Tu. and Th. afternoons. For College and engineering students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 60, for which it is a prerequisite. Dains.

60.—ADVANCED ORGANIC CHEMISTRY. Five hours credit. Second semester, M. W. F., at 9:30. Laboratory, Tu. Th., by appointment. A continuation of course 59B. Dains.

61.—METALLURGY I. Three hours credit. First semester, at 9:30. General metallurgy, the metallurgy of iron and steel. Prerequisite, course 3. Whitaker.

62.—METALLURGY II. Three hours credit. Second semester, at 9:30. The metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Prerequisite, course 3. Whitaker.

63.—METALLURGICAL LABORATORY. Two hours credit. First semester, by appointment. This course includes high-temperature measurements, calorimetry, preparation of silicates and alloys, study of roasting, reduction, oxidation, amalgamation, chlorination, cyaniding, and leaching. Prerequisite, course 61 or 62. Whitaker.

64.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, at 10:30. A course paying special attention to electrochemistry. Lectures, recitations, and laboratory work. Prerequisites, course 3 and satisfactory preparation in general physics and calculus. Cady.

65.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 10:30. A general course in theoretical and physical chemistry. Lectures, recitations, and laboratory work. Prerequisites, courses 1, 2, 3, 59A or 59B, 54, and satisfactory preparation in general physics and calculus. Cady.

66.—TOXICOLOGY. One hour credit. Second semester, at 11:30. A discussion of the sources, properties, methods of detection, *post-mortem* appearances, fatal doses and method of treatment in case of inorganic or organic poisons. Lectures and examinations. Prerequisite, fifteen hours of chemistry. Bailey.

67.—GENERAL METALLURGY. Two hours credit. First semester, at 11:30. Physical properties of metals and alloys, thermal analysis, pyrometry, refractories, slags, matte, bullion, typical metallurgical processes.

DESIGN.

Professor GRIFFITH.
Miss BENSON, Instructor.

EQUIPMENT. The department of design occupies six top-lighted studios on the third floor of the new Administration Building. They are well equipped with casts from the antique, books and plates upon the theory and history of ornamental design, printing presses, a potter's wheel, and easels. The classical museum and the museum of natural history offer an abundance of material for the use of students in design. Kilns are available for the firing of pottery, and the equipment of Fowler Shops for the work in wood and metal. A model poses for the life classes and the University campus offers an ideal sketching ground for the landscape painting classes.

ADVICE AS TO CHOICE OF COURSES. Technical students to whom some drawing is essential are advised to take course 1. Students wishing training in artistic perception and graphic expression for its general culture value should take course 1, followed by 2, or course 52.

1.—FREE-HAND DRAWING. Three hours credit. Both semesters, 8:30 to 10:30. Drawing with pencil and charcoal from the cast and objects of still life, including the principles of perspective and the geometrical problems of mechanical drawing, which aims to teach the student to construct form in a simple and correct manner. Griffith.

2.—DESIGN I. Three hours credit. Both semesters, 10:30 to 12:30. The anatomy of pattern and the planning of ornament. Prerequisite, course 1. Benson.

51.—FREE-HAND DRAWING. Three hours credit. Both semesters, 8:30 to 10:30. A continuation of course 1. Griffith.

52.—HISTORY OF PAINTING. Two hours credit. First semester, at 9:30. A lecture course presenting a survey of the whole field of painting, with the object of attaining the critical knowledge necessary to understand and enjoy a work of art. Griffith.

53.—HISTORY OF AMERICAN PAINTING. Two hours credit. Second semester, at 9:30. Griffith.

55.—DESIGN II. Three hours credit. Both semesters, at 8:30. The application of design. Prerequisite, course 2. Benson.

56.—APPLIED DESIGN I. One hour credit. One semester, five hours per week, by appointment. Must be preceded by courses 1 and 55.

57.—APPLIED DESIGN II. One hour credit. One semester, five hours per week, by appointment. A continuation of course 56.

58.—HISTORY OF DESIGN. Two hours credit. First semester, at 10:30. A lecture course upon the history of ornament. Griffith.

59.—ARTISTIC PHOTOGRAPHY. No credit. Second semester, at 10:30. A course upon the use of photography in artistic expression. Griffith.

ECONOMICS AND COMMERCE.

Professor MILLIS.
Professor BOYNTON.
Assistant Professor PUTNAM.
Assistant Professor DUFFUS.
Assistant Professor HODGE.

EQUIPMENT. Instruction in this department is conducted chiefly by lectures, and reading and investigation in the library, aided in the elementary courses by textbooks. The University library contains about 3500 volumes relating to the courses of instruction, and a fair collection of special reports and documents for research work. All of the principal economic journals are on file in the reading rooms. In addition, there are charts, maps, and outlines. A limited amount of investigation of social and economic conditions is carried on.

ADVICE AS TO COURSES. Economics 1 is an essential foundation for and a prerequisite to all other courses in economics and commerce. Economics 2 and 3 lay a foundation for nearly all of the advanced courses and should be taken by all who expect to elect more than a few units in the department.

REQUIREMENTS FOR A MAJOR. The Elements of Economics (1 or 90), the Economic History of the United States (3), and, unless waived by the department in special cases, the Elements of Accounting (64) *are prescribed for all major students*. The Elements of Accounting should be completed by the end of the Junior year. Major students wishing a general course, or planning to take a graduate course, are advised, in fulfilling the requirements for graduation, to elect from the following fundamental courses: Money and Credit (50), Banking (51), History and Development of Transportation (55), Railway Rates and Government Regulation (56), Corporations and Trusts (57), Public Finance (60), Financial History of the United States (62), Statistics (68), Labor Problems (70), Economics of Agriculture (80), Value, Price and Distribution (91 and 92), and Economic Theory (93 and 94). Those who wish to make special preparation for some vocation should elect studies in addition to those required of all major students in accordance with the suggestions made below.

SUGGESTED SPECIAL GROUPS. By a judicious combination of courses in the department of economics and commerce, and other departments of the College and the technical schools of the University, those wishing to make special preparation for some vocation can secure the more important courses given in the separate schools of commerce of other institutions. Such

students should elect courses more liberally in the department than those who wish only a general major, or plan to take a graduate course. They should, also, early in their College course, consult with the faculty of the department with reference to the election of work in other departments. Upon graduation, those who complete not less than 35 hours, including all italicized subjects in one of the special groups numbered II, III, IV, V, and VI, provided they display good ability and in other respects merit high commendation, receive a special certificate from the department.

I. *Training for Commercial Teaching.* In completing their major requirements, those wishing to prepare for teaching commercial subjects in high school should take *Commercial Geography* (4), *Business Organization and Management* (54), *Business Law* (69), *Money and Credit* (50), *Banking* (51), and *Corporations and Trusts* (57). Teachers of commercial subjects are expected to know stenography and typewriting. These are not taught in the College, but a knowledge of them should be acquired.

II. *General Business Training.* Those who wish a general business course should take *Business Organization and Management* (54), *Money and Credit* (50), *Banking* (51), *Corporations and Trusts* (57), *Labor Problems* (70), *Insurance* (63), and *Business Law* (69). They should also elect advertising (journalism 55 and 56), and in meeting their group requirements, should elect psychology, logic, and more than one course in English composition.

III. *Training for Banking.* Those who plan to prepare for banking should take *Money and Credit* (50), *Banking* (51), *Investments* (53), *Practical Banking* (52), *Corporations and Trusts* (57), and *Business Law* (69).

IV. *Training for Railway Administration.* Those who expect to enter the field of railway transportation should take *Business Organization and Management* (54), *History of Transportation* (55), *Railway Rates*, (56), *Corporations and Trusts* (57), *Statistics* (68), *Business Law* (69), and *Markets and Marketing* (81). They are advised to elect courses in civil or mechanical engineering also.

V. *Training for Commerce.* Those who expect to engage in mercantile pursuits should take *Commercial Geography* (4), *Markets and Marketing* (81), *Money and Credit* (50), *Railway Rates* (56), *Business Law* (69), *Business Organization and Management* (54), and *Corporations and Trusts* (57). They are advised to elect advertising (journalism 55 and 56) and psychology 1.

VI. *Training for Accounting.* Those who expect to enter the practice of accounting should take *Advanced Accounting* (65), *Cost Accounting* (66), *Accounting Problems* (67), *Statistics* (68), *Business Organization and Management* (54), *Corporations and Trusts* (57), *Corporation Finance* (58), and *Business Law* (69). They should also elect probabilities and statistics (mathematics 10).

VII. *Training for the Public Service.* Those preparing for public service work should take *Statistics* (68), *Public Finance* (60), *Labor Problems* (70), *Municipal Industries* (82), and *Corporations and Trusts* (57). They should elect liberally in sociology and political science.

VIII. *Training for Social Service.* Those who plan to engage in some branch of social service should take *Statistics* (68), *Labor Problems* (70), *The State in Relation to Labor* (71), *Immigration* (72), and *Value, Price and Distribution* (91 and 92), and should elect several courses in sociology and political science.

IX. *Economics as Preliminary to the Study of Law.* Many of the courses in economics and commerce will be found to be valuable in preparing for the study of law. Major students who expect to enter the legal profession should take *Corporations and Trusts* (57), *Municipal Industries* (82), *Public Finance* (60), *Money and Credit* (50), *Investments* (53), and *Labor Problems* (70).

1.—ELEMENTS OF ECONOMICS. Five hours credit. First semester, at 8:30, 9:30, 10:30, 1:30 and 2:30; second semester, at 8:30, 9:30, 1:30 and 2:30. This course is essentially a concrete analytical study of the laws governing man in his relation to wealth. It not only furnishes the basis

for the scientific understanding of economic affairs, but serves as the foundation for all other courses in economics. Not open to Juniors and Seniors. (See 90.) Putnam, Duffus, and Hodge.

2.—ECONOMIC HISTORY OF ENGLAND. Three hours credit. First semester, at 9:30. A study of the general development of agriculture, industry, and commerce in England from the tenth century to the present time. The course is designed to show the gradual evolution of an industrial society and to trace those changes by which modern England has attained her present economic position. Prerequisite, course 1. Boynton.

3.—ECONOMIC HISTORY OF THE UNITED STATES. Three hours credit. Second semester, at 9:30. Attention is given to colonial agriculture, industry, and trade as an introduction to the course. After 1789, the main lines of study are the banking, transportation, and tariff history of the United States, with special attention to the development of the natural resources, the rise of manufactures, and the expansion of corporate methods. Prerequisite, course 1. Boynton.

4.—COMMERCIAL GEOGRAPHY. Three hours credit. Second semester, at 11:30. The localization of industry is the central problem of this course. The geographic division of labor is explained so far as possible in terms of nature, man, and accumulated goods. The chief products of the different countries and international trade in them are studied. Tariffs and commercial institutions are taken up. Not open to Freshmen. Prerequisite, course 1. Duffus.

50.—MONEY AND CREDIT. Three hours credit. First semester, at 10:30. The principal forms of money and of credit, as developed in the experience of the principal countries and as at present in use in various parts of the world, are studied. Prerequisite, course 1. Boynton.

51.—BANKING. Three hours credit. Second semester, at 10:30. The principles of banking are studied, and also the principal banking systems, both as to the historical steps in their development and as to their present forms and methods in different countries. Prerequisite, course 50. Boynton.

52.—PRACTICAL BANKING. Two hours credit. First semester, at 10:30. A study of the organization and operation of commercial banks, savings banks, trust companies, and investment banking, including the function of commercial paper houses and note brokers. The nature of banking and mercantile credit is analyzed as well as the broader relation of banking to the money market. Prerequisite, course 51. Boynton.

53.—INVESTMENTS. Two hours credit. Second semester, at 10:30. A study of the various fields of investments, including railway, mining, and industrial securities, and the bonds of governments and municipalities, with special attention to the merits of particular stocks, bonds, mortgages, etc. The work of investment banking houses will likewise be considered. The aim of the course is to determine, so far as possible, the elements of a wise and conservative investment. Prerequisite, course 51. Boynton.

54.—BUSINESS ORGANIZATION AND MANAGEMENT. Three hours credit. First semester, at 1:30. This course treats of general business organization and management, as well as the organization of the business of the bank, the factory, and the general office. The organization and working of the industrial and commercial corporation are given special consideration. Prerequisite, course 1. (Not given 1916-'17.) Hodge.

55.—HISTORY AND ORGANIZATION OF TRANSPORTATION. Two hours credit. First semester, at 11:30. Canal construction and the development of the railway net of the United States; railroad finance and organization; problems of railway maintenance and methods of conducting transportation; accounts and reports illustrating railway operations; a comparative study of railway practices in other countries. Prerequisite, course 1. Should be preceded by course 3. (Given alternate years. Given 1916-'17.) Boynton.

56.—RAILWAY RATES AND REGULATION. Two hours credit. Second semester, at 11:30. A study of the theory of railway rates, and of rate-making in practice; problems of local and personal discrimination; adjustments due to geographical location and market competition; railway

agreements; state railway commissions and the Interstate Commerce Commission; recent legislation, state and national, relating to railway transportation. Prerequisite, course 55. (Given alternate years. Given in 1916-'17.) Boynton.

57.—CORPORATIONS AND TRUSTS. Two hours credit. First semester, at 8:30. A general course dealing with the economic causes and consequences of the combination movement in industry. The following are the leading topics studied: Modern forms of business organization; incorporation and regulation of companies; economies of combinations; pools, trusts, and holding companies; analysis of the trust problem; public policy. Prerequisite, course 1. Putnam.

58.—CORPORATION FINANCE. Two hours credit. Second semester, at 8:30. A continuation of course 57, dealing more specifically with the financial side of large corporations, especially railways. Promotion and capitalization; the issue and sale of securities; analysis of corporation reports; profits, dividends, and surplus; manipulation of finances; insolvency and receivership; principles of reorganization; overcapitalization and regulation of security issues. Prerequisite, course 57. (Given alternate years. Not given in 1916-'17.) Putnam.

60.—PUBLIC FINANCE. Three hours credit. First semester, at 8:30. A general course dealing with the nature and growth of public expenditures, revenues, and public debt, special attention being given to the theory and practice of taxation. Prerequisite, course 1. Millis.

61.—AMERICAN METHODS OF TAXATION. Three hours credit. Second semester, at 8:30. A study of (a) the federal and (b) the state and local systems of taxation. In the study of the federal system, special attention is given to tariff reform and the income tax. In the study of state and local taxation, special attention is given to the problems presented in Kansas. Prerequisite, course 60 or course 62. Millis.

62.—FINANCIAL HISTORY OF THE UNITED STATES. Two hours credit. First semester, at 8:30. This course deals with the revenues, expenditures, and debt of the United States. Special attention is given to tariff history and to the growth of public expenditures since the Civil War. Prerequisite, course 1. (Not given in 1916-'17.) Millis.

63.—INSURANCE. Three hours credit. Second semester, at 9:30. A study of (a) the general economic nature of risk and the theory of insurance; (b) the organized business of fire and life insurance, including details with respect to policy contracts, fire insurance rating, the calculation of life insurance premiums, reserves, investment of funds etc.; and (c) the relation of the state to insurance. Prerequisite, course 1. (Given alternate years. Not given in 1916-'17.) Duffus.

64.—ELEMENTS OF ACCOUNTING. Three hours credit. First semester, at 2:30. This course serves as an introduction to the field of accounting. The principles underlying the various accounting practices are studied, and enough problems are solved to familiarize the student with the more common and simpler forms used in representing the progress and condition of a business firm. Prerequisite, course 1. Hodge.

65.—ADVANCED ACCOUNTING. Three hours credit. Second semester, at 2:30. Advanced problems in the construction and interpretation of the balance sheet and other forms of final reports involving the application of the theory of depreciation, valuation of assets, sinking fund accounts, reserves, executors' accounts, and consignment accounts; typical examples of modern accounting systems; the procedure and theory of audits, formal accounting investigations, and the responsibility of the auditor. Prerequisite, course 64. Hodge.

66.—COST ACCOUNTING. Three hours credit. First semester, at 1:30. An application of the principles of accountancy in the field of cost-keeping. Analysis of and separation of different kinds of revenues and different items of cost. Various methods of allocating expenses to product; laboratory practice in some of the problems involved in cost-keeping as applied in a typical manufacturing establishment. Prerequisite, course 65. Hodge.

67.—ACCOUNTING PROBLEMS. Two hours credit. This course is devoted to the study of selected problems in practical accounting.

68.—STATISTICS. Three hours credit. Second semester, at 9:30. The statistics of wages, prices, population, etc., are studied in such a manner as to give a working knowledge of the elements of statistical methods and the scope and meaning of statistical inquiry. Prerequisite, course 1. Millis.

69.—BUSINESS LAW. Three hours credit. Second semester, at 1:30. A study is made of the principles of law with reference to their application to business. The essentials of contracts, agency, bailments, sales, negotiable instruments, real property, and other like topics are presented. The elements of partnership and corporation law are also studied. Prerequisite, course 1. Hodge.

70.—LABOR PROBLEMS.—TRADE UNIONS. Two hours credit. First semester, at 8:30. After an introduction to labor problems, the history, assumptions, policies, and practices of trade-unions are studied, with special reference to the United States. Prerequisite, course 1. Millis.

71.—LABOR PROBLEMS.—THE STATE IN RELATION TO LABOR. Two hours credit. Second semester, at 8:30. A continuation of course 70. The leading topics studied are: industrial disputes and voluntary and compulsory arbitration; the minimum and living wage; industrial accidents, employer's liability, workmen's compensation, accident insurance, and accident prevention; occupational disease; old-age pensions; unemployment and its remedies; the labor of women and children. These are studied with reference to American conditions. Prerequisite, course 70 or its equivalent. (Given alternate years. Not given in 1916-'17.) Millis.

72.—IMMIGRATION PROBLEMS. Two hours credit. The history of immigration to the United States and its causes, the geographical and occupational distribution of the foreign born, the economic effects of immigration, its effect on dependency, crime, etc., and social and political institutions, the problem of assimilation, and a proper immigration policy, are the principal topics studied. Prerequisite, course 1. (Not given in 1916-'17.) Millis.

80.—ECONOMICS OF AGRICULTURE. Two hours credit. Second semester, at 8:30. The principal topics studied are: private property in land; public land policy of the United States and its economic consequences; organization of the productive factors; size of farms, and land values; tenancy and land ownership; rural credit; marketing; cooperative organization among farmers. Special attention is given to conditions in Kansas. Prerequisite, course 1. (Given alternate years. Given in 1916-'17.) Putnam.

81.—MARKETS AND MARKETING. Three hours credit. First semester, at 11:30. Summarized history of marketing organization; principal types of present-day markets and marketing agencies; the functions of the middleman in the distribution of the products; organized speculation in farm products; the organization of domestic and foreign trade; various proposals for improving marketing methods. Prerequisite, course 4 or its equivalent. Duffus.

82.—MUNICIPAL INDUSTRIES. Two hours credit. Second semester, at 11:30. The topics studied are Problems of water, lighting, transportation, and telephone services; municipal markets and minor industries; public ownership versus regulated private ownership; the direct versus the contract plan in public work; rates, standards of service, reports, accounts, etc. Prerequisite, course 1. (Given alternate years. Given in 1916-'17.) Duffus.

90.—ELEMENTS OF ECONOMICS. Three hours credit. Second semester, at 11:30. The same as course 1, except that it is designed especially to meet the needs of Juniors and Seniors. Millis.

91.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH I. Two hours credit. First semester. This course is designed to give mature students of economics a firm grasp of the more important economic principles. The theories of value and prices and distribution are studied in the light of current schools of thought. Prerequisite, course 1 or 90, but open only to

Seniors and graduate students. Students are not expected to enroll in this course unless they plan to take course 92 also. (Given alternate years. Given in 1916-'17.) Millis.

92.—VALUE, PRICE AND THE DISTRIBUTION OF WEALTH II. Two hours credit. Second semester. A continuation of course 91, which must have been completed. (Given alternate years. Given in 1916-'17.) Millis.

93.—ECONOMIC THEORY, TO ADAM SMITH. Two hours credit. First semester, at 11:30. The growth of thought about economic matters in ancient, mediæval and modern times down to about the end of the eighteenth century is studied, chiefly from the works of the original writers. This study furnishes many points for suggestive contrasts and comparisons between earlier and later theories, and explains many features of modern economic theories. Open to graduate students and Seniors with consent of instructor. Prerequisite, course 1. Should be preceded by course 2 also. (Given alternate years. Not given in 1916-'17.) Boynton.

94.—ECONOMIC THEORY, SINCE ADAM SMITH. Two hours credit. Second semester, at 11:30. The extensive economic literature of the nineteenth century is the subject matter of this course. The important economists are all studied at first hand, and occasional attention is given to the work of minor writers in cases where their writings contain important germs of theories later developed by others of greater prominence. Prerequisite, course 93. (Given alternate years. Not given in 1916-'17.) Boynton.

EDUCATION.

The following courses in the School of Education are open to College students, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Education as well as the College, and will be admitted to the classes as students of the School of Education.

Courses in education, of which detailed descriptions will be found in Section IX, are arranged in the following four groups. College students may not offer more than seven hours in any one group.

Historical group: numbers 50, 51, 59, 60, and 63.

Theoretical group: numbers 1, 54, 55, 64, 65, 67, 68, 69, 70, 71, 75, 78, and 79.

Administrative group: numbers 3, 53, 56, 57, 58, 61, 66, 72, 73, 74, and 77.

Teachers' courses: numbers 80, 81, 82, 83, 85, 86, 87, 88, 89, 90, 91.

No college credit is given for practice teaching.

ENGINEERING.

C. E. 1a.—SURVEYING. Three hours credit. First semester, Tu. Th., at 10:30 and 11:30, with field work at 1:30 to 4:30. A course for College students. Prerequisite, plane trigonometry. McNown.

C. E. 1b.—SURVEYING. Three hours credit. Second semester. A continuation of the preceding course. McNown.

The following courses in the School of Engineering are open to College students, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Engineering as well as the College, and will be admitted to the classes as engineering students.

ENG. DR. 3.—DESCRIPTIVE GEOMETRY. Three hours credit. Both semesters.

C. E. 52.—CITY PLANNING. Two hours credit. Second semester.

C. E. 70.—SANITARY ENGINEERING I. Three hours credit. First semester.

C. E. 71.—SANITARY ENGINEERING II. Four hours credit. Second semester.

C. E. 73.—SANITARY SCIENCE AND PUBLIC HEALTH. Two hours credit. First semester.

- C. E. 75.—ROADS AND PAVEMENTS. Two hours credit. Second semester.
 E. E. 50.—DYNAMO MACHINERY. Three hours credit. First semester.
 E. E. 51.—THEORY OF ALTERNATING CURRENTS. Five hours credit. Second semester.
 M. E. 51.—THERMODYNAMICS. Three hours credit. First semester.
 M. E. 60.—SHOP METHODS. One and one-half hours credit. Second semester.
 ENG. 51.—MANUFACTURING. Two hours credit. First semester.
 ENG. 52.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester.
 MECH. 50.—MECHANICS. Five hours credit. Both semesters.
 MECH. 51.—STRENGTH OF MATERIALS. Five hours credit. Both semesters.
 MECH. 55.—HYDRAULICS. Three hours credit. Both semesters.
 A. E. 5.—HISTORY OF ARCHITECTURE I. Three hours credit. First semester.
 A. E. 6.—HISTORY OF ARCHITECTURE II. Three hours credit. Second semester.

ENGLISH LANGUAGE AND LITERATURE.

Professor DUNLAP.
 Professor HOPKINS.
 Professor O'LEARY.
 Associate Professor WHITCOMB.
 Associate Professor SISSON.
 Associate Professor JOHNSON.
 Associate Professor CROISSANT.
 Associate Professor LYNN.
 Assistant Professor GARDNER.
 Assistant Professor BURNHAM.
 Miss WINSTON, Instructor.
 Miss MORGAN, Instructor.
 Miss BROWN, Instructor.
 Miss LAIRD, Instructor.
 Miss HOPKES, Instructor.
 Mr. WATTLES, Instructor.
 Miss SWENSON, Instructor.
 Mr. FLINT, Instructor.
 Mr. SHOSTAC, Instructor.

EQUIPMENT. Apart from a number of portraits and historical maps, the equipment for this department is the University Library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English literature, and to the English language. There are complete sets of journals, such as *Anglia* and *Englische Studien*, and the publications of the Early English Text Society, the Chaucer Society, the English and American Dialect Societies, the Spenser Society, the Shakspeare Society, the New Shakspeare Society, the Shelley Society, the Browning Society, and others. The library also possesses the Shakspeare Jahrbuch, and facsimiles of the quartos and folios of Shakspeare. The total number of volumes pertaining to the subjects in this department is 12,199. Of these 1209 are devoted to Shakspeare, 7678 to other English literature, 708 to English philology, and 2604 to American literature.

Prerequisites: Courses 1, 2, 10, and 11, or their equivalent, must be completed before the student can be admitted to any other English courses whatever; and courses 12 and 13, scheduled for the Sophomore year, or their equivalent, are prerequisite to all succeeding courses in English literature. In special cases students may be allowed, with the consent of the department, to take course 12 or 13 in connection with an advanced course.

RHETORIC AND COMPOSITION.

1.—RHETORIC AND ENGLISH COMPOSITION.** Three hours credit. First semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. Themes and exercises, with outlines of rhetorical theory. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

2.—RHETORIC AND ENGLISH COMPOSITION.** Two hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. A continuation of course 1. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

Credit for courses 1 and 2 is given provisionally and will be withdrawn for subsequent use of notably bad English.

3.—THE PRINCIPLES OF ARGUMENTATION.* Three hours credit. Second semester, at 10:30. The general principles of logic as applied in discourse, with briefs and exercises. Hopkins.

50.—NARRATION AND DESCRIPTION. Three hours credit. First semester, at 8:30, 9:30, and 10:30. A study of general principles, with exercises. A fundamental course, recommended as preparation for English 55 to 58, inclusive. O'Leary and Lynn.

51.—NARRATION AND DESCRIPTION. Two hours credit. Second semester, at 8:30 and 9:30. A continuation of course 50. O'Leary and Lynn.

52.—EXPOSITION. Two hours credit. First semester, at 9:30. A study of general principles, with outlines and exercises. A fundamental course. Recommended as preparation for English 55 to 58, inclusive. Gardner.

53.—ADVANCED ARGUMENT. Three hours credit. Second semester, at 2:30. Prerequisite, course 3. Hopkins.

55.—LITERARY CRITICISM. Two hours credit. First semester, at 1:30. Study of the principles and methods of criticism through its literature, with practice in book reviewing and in critical writing. Hopkins.

56.—VERSIFICATION. One hour credit. First semester, Monday, at 4:30. Study of the forms and principles of English verse, with exercises. Hopkins.

57.—ESSAY WRITING. Two hours credit. Second semester, at 10:30. A study of general principles, with exercises. O'Leary.

58.—PROSE INVENTION. Two hours credit. Second semester, at 1:30. General survey of theories of literary art, with practice in original production. Library and conference course, with required thesis. Prerequisites, one or more advanced courses in English composition. Hopkins.

LANGUAGE.

60.—ELEMENTARY OLD ENGLISH. Three hours credit. First semester, at 3:30. Old English grammar, with reading of West Saxon prose texts. A prerequisite for all other courses in Old English. Burnham.

61.—BEOWULF. Two hours credit. Second semester, at 3:30. Open only to students who have had course 60. Burnham.

62.—MIDDLE ENGLISH. Two hours credit. First semester, at 2:30. Language and literature of the fourteenth century, exclusive of Chaucer. Burnham.

63.—MIDDLE ENGLISH. Three hours credit. Second semester, at 3:30. Reading of Middle English texts, with study of the development of the English language, its sounds, inflections, and syntax. Burnham.

64.—ADVANCED OLD ENGLISH. Three hours credit. First semester, at 1:30. Selections from Cynewulf and the Cædmonian poems. Must be preceded by course 60.

65.—METRICAL ROMANCES. Two hours credit. Second semester, at 2:30. Reading of Middle English romances.

66.—THE ANGLO-SAXON CHRONICLE. Two hours credit. First semester, at 1:30. Reading of the Chronicle, with special attention to the life of the English people. Must be preceded by course 60.

68.—MODERN ENGLISH GRAMMAR. Two hours credit. First semester, at 1:30. English grammar, chiefly practical, for intending teachers. Open only to qualified applicants after consultation with the instructor. Burnham.

LITERATURE.

10.—ENGLISH LITERATURE. Two hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30. Class study of representative authors, with required library reading. Open to all students of the College not offering English literature as a fourth unit of entrance English. Required for admission to all other courses in English above 11, except in the case of students who offer for entrance a fourth unit in English literature. Sisson and assistants.

11.—ENGLISH LITERATURE. Three hours credit. Second semester, 8:30, 9:30, 10:30, 11:30, 1:30. Class study of representative authors, with required library reading. Required for admission to all later courses in English, except in the case of students who offer for entrance a fourth unit in English literature. Sisson and assistants.

12 *a* and *b*.—HISTORY OF ENGLISH LITERATURE.* 12*a*, three hours credit; 12*b*, two hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30. Prerequisites, English 1, 2, 10, and 11. Lynn and assistants.

13 *a* and *b*.—HISTORY OF ENGLISH LITERATURE.* 13*a*, three hours credit; 13*b*, two hours credit. Second semester, 8:30, 9:30, 10:30, 11:30, 1:30. Prerequisite, English 1, 2, 10, and 11. Lynn and assistants.

71.—AMERICAN LITERATURE I. Three hours credit. First semester, at 1:30. General history, with special reference to the work of the chief American poets. Hopkins.

72.—AMERICAN LITERATURE II. Three hours credit. Second semester, at 1:30. Study of later writers and of current literature, with special reference to fiction. Hopkins.

73.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. First semester, at 9:30. The period covered is that from 1660 to approximately 1735. O'Leary.

74.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours credit. Second semester, at 9:30. Covers the period from 1735 to 1798. O'Leary.

75.—VICTORIAN LITERATURE, exclusive of the novel and Tennyson and Browning. Two hours credit. First semester, at 10:30. Dunlap.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. First semester, at 11:30. Prose, exclusive of the novel. The authors studied are Lamb, DeQuincey, Hazlitt, Newman, Landor, Ruskin, and Stevenson. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours credit. Second semester, at 9:30. Poetry. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Dunlap.

78.—SHAKSPERE. Three hours credit. Both semesters, at 10:30. Lectures upon the life and times of Shakspeare. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Dunlap.

79.—CHAUCER. Three hours credit. First semester, at 9:30. Lectures upon Middle English grammar and upon the life and times of Chaucer. Neither Old nor Middle English required for entrance. Careful reading, of the Prologue, Knightes Tale, and the Nonne Preestes Tale. Rapid reading of a large part of the Canterbury Tales. Dunlap.

80.—SHELLEY AND KEATS. Two hours credit. Second semester, at 11:30. Lectures, and interpretation of selected poems. Dunlap.

81.—BROWNING AND TENNYSON. Two hours credit. Second semester, at 8:30. Interpretative study of selected poems, with general view of the works of both authors. Lynn.

82.—CARLYLE AND EMERSON. Two hours credit. Second semester, at 9:30. The characteristics of each man's work and its relation to nineteenth century thought. Lectures and class reports. (Given in 1918 and each alternate year following.) Johnson.

83.—MILTON AND HIS CONTEMPORARIES. Two hours credit. Second semester, at 9:30. The poetry and prose of Milton, with supplementary study of a selected number of representative contemporary authors. (Given in 1917 and each alternate year following.) Johnson.

84.—THE MODERN ENGLISH LYRIC. Two hours credit. First semester, at 3:30. A representative body of English lyrics will be studied in the classroom, with attention to the general criticism of lyric poetry, as well as to individual and historical values. Whitcomb.

85.—TECHNIQUE AND THEORY OF THE DRAMA. Two hours credit. First semester, at 2:30. Study of dramatic dialogue, diction, characterization, and stage presentation. Lectures and weekly exercises in criticism or composition. Whitcomb.

86.—HISTORY OF THE ENGLISH DRAMA. Three hours credit. First semester at 8:30. From the early liturgical plays to 1642. Study of origins and influences; the growth of types; stage history; and reading and criticism of about thirty plays. Written reports and lectures. Johnson.

87.—HISTORY OF THE ENGLISH DRAMA. Two hours credit. Second semester, at 2:30. English dramatic history from 1642 to the present time, with special attention given to Victorian and post-Victorian drama. Whitcomb.

88.—THE ENGLISH NOVEL. Three hours credit. Second semester, at 11:30. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Dunlap.

89.—THE ENGLISH ESSAY. Two hours credit. Second semester, at 9:30. A study, historical and critical, of the essay as a literary form, from Bacon to the present time. O'Leary.

91.—BIOGRAPHY AND AUTOBIOGRAPHY. Two hours credit. First semester, at 3:30. A study of the values and problems of the individual life, as suggested by the detailed records of significant lives. Whitcomb.

ENTOMOLOGY.

Professor HUNTER.
Assistant Professor HUNGERFORD.
Miss HOSFORD, Assistant Instructor.

EQUIPMENT. The arrangement of the laboratories is such as to provide for (1) general instruction; (2) research work in serial-breeding experiments and conditions governing development. Special thermal regulators for determination of influence of temperature on development are used in these researches. A feature of great value is the recent completion of the cross-reference card index to the current entomological literature. A new insectary with greenhouse adjoining has just been completed. In addition to regular insectary equipment, special facilities for the study of aquatic life have been installed. The extensive collections, both biologic and systematic, offer exceptional facilities for comprehensive instruction in the various groups. A more extended notice of these collections will be found under the head of Museums. A large series of cabinets has been especially arranged to aid in teaching. These are supplemented by models illustrating developmental processes.

ADVICE AS TO CHOICE OF COURSES. The courses in entomology are designed to meet the needs of three classes of students: (1) The general student who desires a fuller knowledge and appreciation of the biological problems illustrated by insect life; (2) the student who is preparing to teach botany, zoölogy or general biology in the high school; (3) and the special student who is preparing to become a teacher or investigator. For the first class, courses 1, 2, 3, and 4 are recommended; for the second class, in addition to these, courses 51, 53, and 60. For the third class, after the completion of the four fundamental courses, the aims of each student will largely determine the selection of advanced courses. The advice of the department is that such selection shall be made only after consultation.

1.—INTRODUCTORY ENTOMOLOGY. Five hours credit. Both semesters. Field excursions and laboratory, 9:30 to 10:30 and 1:30 to 2:30. Lecture and recitation, Tu. Th., 9:30 and 1:30. A general course in behavior of insects and other arthropods, and their relations to plants and other animals. A field, laboratory and lecture course designed for the general student. Fee, \$1. Hunter and assistants.

2.—MORPHOLOGY OF INSECTS I.* Three hours credit. Second semester, 10:30 to 12:30. A course presenting the more general features of the form and structure of a few representative insects. Laboratory study, lectures, and assigned readings. Prerequisite, course 1 or equivalent. Fee, \$1.50. Hunter.

50.—INTRODUCTORY ENTOMOLOGY. Five hours credit. Both semesters. Lecture and recitation, Tu. Th., 9:30 and 1:30. Field excursions and laboratory, 9:30 to 10:30 and 1:30 to 2:30. A general course in behavior of insects and other arthropods, and their relations to plants and other animals. A field, laboratory and lecture course designed for the general student. Not open to students who have had course 1. Fee, \$1. Hunter.

51.—MORPHOLOGY OF INSECTS II. Three hours credit. First semester, 10:30 to 12:30. A study of the internal structure and development of a few representative types of insects, and their bearing upon physiological processes of life. Prerequisite, entomology 1 or equivalent. Fee, \$1.50.

52.—SYSTEMATIC ENTOMOLOGY. Two hours credit. Both semesters, 2:30 to 4:30. This course gives special prominence to the systematic position of the orders studied. The laboratory work consists of the classification of insects, and is accompanied by studies in the life histories of the various forms identified. Prerequisite, entomology 1 or equivalent. Fee, \$1. Hungerford.

53.—BIOLOGY OF THE ARTHROPODS. Two hours credit. Second semester, 10:30 to 12:30. This course, conducted in field and laboratory, deals with ecology, adaptation to environment, mode of life, and such other general biological studies as illustrated in the lives of insects and other Arthropods. Prerequisites, course 1 or equivalent. Fee, \$1. Hungerford.

54.—ADVANCED MORPHOLOGY AND HISTOLOGY OF INSECTS. Three hours credit. Both semesters, 1:30 to 3:30. Prerequisites, courses 4 and 51. Fee, \$1.50. Hunter.

55.—TAXONOMY OF INSECTS. Three hours credit. Both semesters, by appointment. A continuation of course 53, enabling the student to undertake the serious study of some one family. Students qualified to take this course are afforded an opportunity to work with the material secured on the biological survey trip of the previous summer. (Special study of the Coccidæ may be elected in this course.) Prerequisite, entomology 1 and 56. Fee, \$1. Hungerford.

56.—APPLIED ENTOMOLOGY I. Two hours credit. First semester, at 11:30. Lectures, recitations, and observations in the field on forms of economic value; life histories, habits, and methods of combating the injurious forms, and of utilizing the beneficial. Prerequisite, course 1 or equivalent. Fee, \$1. Hungerford.

57.—APPLIED ENTOMOLOGY II. Two hours credit. Second semester, at 8:30. A continuation of course 56. This course deals especially with those insects that are intimately associated with the household, the garden, and the farmyard. Course 56, which deals with the insects of farm and orchard crops, is not a prerequisite for this course, which is nontechnical, and is intended for the general student. Hungerford.

58.—MEDICAL ENTOMOLOGY. Two hours credit. First semester, at 10:30. A study of the relations of insects and other arthropods to public health. A lecture, recitation, and demonstration course for the purpose of acquainting the student with those forms which are liable to transmit human diseases. Hunter.

60.—AGRICULTURE. Two hours credit. First semester, at 8:30. This course deals with insects injurious to crops. This course should be taken in combination with botany 60 and zoölogy 72b. Prerequisites, course 1, elementary zoölogy and plant physiology. Hungerford.

GEOLOGY AND MINERALOGY.

Professor HAWORTH.
Associate Professor TWENHOFEL.
Assistant Professor TODD.

GENERAL STATEMENT. Under the general heading of geology are included structural, dynamic, stratigraphic, physiographic, economic, and historical geology, and invertebrate paleontology; also mineralogy, crystallography and petrography.

Students may begin work in geology 1 the first semester of the Sophomore year, and follow this by mineralogy 10 during the second semester. Throughout the Junior and Senior years subjects may be chosen in accordance with the general rules governing majors and minors.

Courses in the department are arranged with reference to three main classes of students: (a) those expecting to specialize in some phase of geological science; (b) those wishing to acquire some knowledge of the structure, composition and history of the earth as a part of a liberal education; and (c) those who feel they need some knowledge of the earth's surface and structure as an aid to the interpretation of facts of other sciences or branches of learning.

EQUIPMENT. The library includes the principal standard works on geology, invertebrate paleontology, mineralogy, and petrography, in the English, German, and French languages; fairly complete sets of governmental, state and foreign reports; numerous American and foreign periodicals and transactions of domestic and foreign learned societies; all of which are conveniently located in the reading room of Haworth Hall. The department has also numerous charts and maps; a modern reflectoscope with over 400 lantern slides; papier-mâché models of structural and topographic forms; extensive collections of crystalline rocks and thin sections for petrography, rocks, ores, minerals, and fossils; sets of wooden and glass models of crystallographic forms; petrographic and other microscopes, and numerous other instruments for geologic work.

ADVICE AS TO CHOICE OF COURSES. Students wishing to specialize in geology should take substantially all the courses in the order outlined; those of the second class, mentioned above, should begin with course 1 and follow with courses 10 and 50, while those of the third class should select courses closely related to their major subjects in other departments.

1.—**ELEMENTARY GEOLOGY.** Five hours credit. Both semesters, daily, 8:30, 9:30, 10:30, 2:30. A study of the elementary principles of geology, including a general outline of geologic principles and geologic agencies. An acquaintance with the elements of chemistry, zoölogy, and botany will be of advantage in this course. Todd and Twenhofel.

10.—**ELEMENTARY MINERALOGY.** Five hours credit. Second semester, daily, 3:30 to 5:30. A brief course in crystallography, blow-pipe analysis, and systematic mineralogy, consisting of lectures and laboratory work. Prerequisite, elementary chemistry. Todd.

50.—**HISTORICAL GEOLOGY I.** Three hours credit. First semester, at 11:30. A continuation of course 1, with special reference to earth history, continental development, stratigraphy of land areas, history of plant and animal life, and the use of fossils in the identification and correlation of stratified rocks. Prerequisite, course 1. Twenhofel.

51.—**HISTORICAL GEOLOGY II.** Two hours credit. Second semester, at 11:30. A study of the development of geological science, the environments of its inception and growth, the men who assisted in its development, and the contribution of each. Twenhofel.

52.—**STRUCTURAL AND DYNAMIC GEOLOGY I.** Three hours credit. First semester, at 10:30. This course covers an extended study of the geological structure of the world, and of dynamic principles determining the same; also, study and practice in making geological sections, geological maps, and geological reports of specific areas. In this work much use is made of the various national and state geological survey reports. Prerequisite, course 1. Haworth.

53.—STRUCTURAL AND DYNAMIC GEOLOGY II. Three hours credit. Second semester, at 10:30. A continuation of course 52. During this semester much outdoor work is done. It is intended to make the student sufficiently familiar with the plane-table and methods of using the same, and with methods employed by best practice of field geologists to prepare him for conducting practical geological investigations. Prerequisite, course 53. Haworth.

54.—ECONOMIC GEOLOGY I. Three hours credit. First semester, at 9:30. A general study of the metallic products of mine and quarry, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Prerequisites, elementary chemistry, and geology 1 or 10. Lectures and library work. Haworth.

55.—ECONOMIC GEOLOGY II. Five hours credit. Second semester, at 10:30. Nonmetallic products, principally oil, gas, and coal. A brief study of the chemistry of the hydrocarbon fuels, followed by an extended study of their geology, geography, and commerce. Haworth.

56.—PHYSIOGRAPHY. Three hours credit. Second semester, at 9:30. A study of the general principles of physiography, with detailed studies of specific areas in latter parts of course. Prerequisite, course 1. Lectures, textbook, and library work. Haworth.

57.—INVERTEBRATE PALEONTOLOGY I. Five hours credit. First semester, by appointment. A study of the principles of paleontology and the structure, classification and evolution of invertebrates which occur as fossils. The work is largely laboratory in character, but lectures are given as need requires. Prerequisites, zoölogy 1, geology 1 and 50. Zoölogy 2a and 2b are very desirable. Twenhofel.

58.—INVERTEBRATE PALEONTOLOGY II. Five hours credit. Second semester, by appointment. A continuation of course 57, but stratigraphical in its character. Fossils are studied as indices of time and geography. Course 57 is prerequisite. Twenhofel.

59.—SOILS. Three hours credit. Second semester, at 2:30. A short course on soils, including a study of origin, nature, fertility and maintenance of same in soils. Scientific and practical. Textbook, lectures, and readings. Prerequisites, chemistry 1, geology 1. Haworth.

60.—SYSTEMATIC MINERALOGY. Five hours credit. First semester, by appointment. This course is a continuation of mineralogy 1, including an extended study of mathematical and physical crystallography. Todd.

61.—PETROGRAPHY. Five hours credit. Both semesters, by appointment. This course includes a study of the mineralogical and chemical composition of rocks, their origin, structural features, and classification. Haworth.

GERMANIC LANGUAGES AND LITERATURES.

Professor ENGEL.
 Professor THURNAU.
 Associate Professor CORBIN.
 Associate Professor KRUSE.
 Assistant Professor BRIGGS.
 Assistant Professor STURTEVANT.
 Miss WILSON, Instructor.
 Miss JONES, Instructor.
 Miss PALMER, Instructor.
 Mrs. SPANGLER, Instructor.
 Mr. PALMBLAD, Instructor.
 Miss HOCHDOERFER, Instructor.
 Mr. HAWKINS, Instructor.

EQUIPMENT. The German department has an excellent stereopticon, a balopticon, and over 1000 stereopticon slides, illustrating scenery, costumes, and biography; an increasing number of excellent photographs and prints in frames; a complete set of German wall maps showing the various separate states, and a few busts. The department has a Columbia graphophone and is accumulating a series of speech records for illustration of differing German

pronunciation. There are 4471 volumes in the library of the German department, and twenty-one philological and literary journals are received.

The department has also a valuable collection of 3000 unbound dissertations and school programs, covering all fields of Germanistic scholarship. With the present library and this acquisition of special studies, the German department is prepared to encourage graduate study in Germanic languages at the University of Kansas.

ADVICE AS TO CHOICE OF COURSES. Students who plan to major in German should consult with the department before the close of the Sophomore year for special guidance in their subsequent work in German and for advice as to courses to be taken in other departments. Courses 1 to 14 are open to all students of the College. Courses 52 to 59 are open to both undergraduates in the College and to graduate students. Courses 1, 2, 3, 4 must be taken in their order. Students majoring in German must elect composition, course 11, which should be taken along with course 5 as a preparation for subsequent courses 6 to 14. From these at least one more reading course must be taken in preparation for the major group, courses 50 to 59.

1.—**ELEMENTARY GERMAN.—ESSENTIALS OF GRAMMAR.** Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30 to 3:30, 2:30; second semester, 8:30, 10:30, 11:30, 1:30. Practice in speaking and writing German.

With the afternoon division, from 1:30 to 3:30, the laboratory method is used, requiring two hours' classroom work and one hour preparation outside. It is open to students of the College only.

2.—**PROSE READINGS.** Five hours credit. First semester, 9:30, 10:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30. Selected texts from modern writers of short stories, with composition and conversation based upon them. Review of grammar topics, with exercises.

3.—**INTERMEDIATE GERMAN.** Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30, 3:30; second semester, 9:30, 10:30, 11:30, 1:30. Selected narrative prose texts with composition and conversation based upon them; introduction to classics: Wilhelm Tell or Minna von Barnhelm.

4.—**GERMAN CLASSICS.** Five hours credit. First semester, 8:30, 9:30, 11:30, 2:30; second semester, 8:30, 9:30, 11:30, 2:30. Hermann u. Dorothea and Jungfrau von Orleans; composition and outline of German literature.

5.—**WALLENSTEIN.** Three hours credit. First semester, 8:30, 11:30; second semester, 8:30, 10:30. Students majoring in German should elect German composition in connection with this course. Thurnau, Kruse.

6.—**IPHIGENIE AND NATHAN DER WEISE.** Three hours credit. First semester, 11:30; second semester, 11:30. Corbin.

7.—**MODERN NARRATIVE PROSE.** Two hours credit. First semester, at 10:30. Selections from the best-known writers of the nineteenth and twentieth centuries. Prerequisites, German 1-4. Jones.

8.—**MODERN DRAMATIC PROSE.** Two hours credit. Second semester, at 10:30. Reading of representative plays of the best-known modern dramatists. Open to students who have had German 4. Wilson.

9.—**HISTORICAL PROSE.** Three hours credit. Second semester, at 9:30. Introductory reading of Schönfeld's German Historical Prose, followed by more rapid and extensive reading in selected historical writings. The purpose of this course is to develop rapid and intelligent reading of German works and periodicals in history and sociology. Prerequisite, German 4. Palmblad.

10.—**SCIENTIFIC GERMAN.** Three hours credit. Second semester, at 9:30. Introductory reading of Lassar-Cohn's *Die Chemie im täglichen Leben*, followed by more rapid and extensive reading in selected scientific writings. The purpose of this course is to develop ability in rapid and intelligent reading of German scientific works and periodicals. Prerequisite, course 4. Briggs.

11.—**GERMAN COMPOSITION.** Two hours credit. First semester, 8:30, 9:30, 11:30; second semester, 8:30, 10:30, 3:30. Required of all students majoring in German. Thurnau and assistants.

12.—ADVANCED GERMAN COMPOSITION. Two hours credit. Second semester, at 9:30. This course is planned especially for those students who expect to teach German, but is open to all who have had course 11. The course aims to develop the ability to write correct and idiomatic German in translation and original compositions, with the mastery of a definite vocabulary. Engel.

13.—GERMAN ORAL COMPOSITION. Two hours credit. First semester, 8:30, 11:30; second semester, 8:30, 11:30. The aim of this course is to aid students in acquiring and using a practical conversational vocabulary based on materials dealing with German life and customs. Prerequisite, course 4. Thurnau, Kruse, Palmblad.

14.—LESSING'S *LAOCOÖN* AND *DRAMATURGIE*. Three hours credit. Second semester, 9:30. Selected portions of these works, with supplementary reading and discussion of the principles of art and the drama. Corbin.

50.—GOETHE'S *FAUST*. (Parts I and II.) Three hours credit. Second semester, at 11:30. Corbin.

51.—GERMAN LITERATURE. Three hours credit. First semester, at 10:30. A general survey of the history of German literature from the earliest times to the present. Lectures in connection with Thomas' *History and Anthology*. Thurnau.

52.—HISTORY OF GERMAN PROSE FICTION. Three hours credit. Second semester, at 10:30. Lectures and selected readings. Special emphasis on the growth of realism in the nineteenth century. Thurnau.

53.—THE LYRICS OF GOETHE. Two hours credit. First semester, at 8:30. Study of the lyrics in connection with the life and letters of the author. Corbin.

54.—THE REALISTIC DRAMA. Three hours credit. First semester, at 8:30. A brief consideration of the development of the German drama, followed by a more intensive study of the dramas of Hebbel, Ludwig, and Anzengruber. Lectures, readings, and reports. Kruse.

55.—THE NATURALISTIC DRAMA. Two hours credit. Second semester, at 8:30. Hauptmann, Sudermann, and Halbe. Lectures, readings, and reports. Should be preceded by course 54. Kruse.

56.—THE ROMANTIC DRAMA. Two hours credit. Second semester, at 8:30. Heinrich von Kleist, Grillparzer, and Wagner. Lectures, readings, and reports. This course alternates with course 55. Kruse.

57.—STORM AND STRESS. Three hours credit. First semester, at 9:30. Special study of the writings of Goethe and Schiller in this period, with lectures and library reading on the lesser writers and the literary movement as a whole. Engel.

58.—MODERN SWEDISH. Two hours credit. First semester, and three hours second semester; by appointment. Fort's *Elementary Swedish Grammar*, Hildebrand's *Läsebok*, Esaias Tegner's *Fritiofssagn* and *Nattwardsbarnen*. (Not given in 1916-'17.) Sturtevant.

59.—MODERN NORWEGIAN. Two hours credit. First semester, and three hours second semester; by appointment. Olsen's *Grammar and Reader*, and selected texts. Sturtevant.

GREEK.

Professor WILCOX.
Associate Professor STERLING.
Assistant Professor BRANDT.

EQUIPMENT. Twelve casts of Greek sculpture in the round, ten busts; the east frieze and twelve slabs of the north, and three metopes of the Parthenon, and four other reliefs; a model of the Acropolis of Athens, the east pediment of the temple of Zeus at Olympia, and the Victories of Paionios and Samothrace; a relief map of Athens, and numerous wall maps; a series of facsimile reproductions of Mycenæan works of art; a few original ancient coins; 800 photographs; 500 plates (many colored) of architecture and vases and paintings; 55 illustrated folios; 3000 volumes in the library; 15 current periodicals; and a stereopticon with 3000 slides.

FOR STUDENTS OF CLASSICAL GREEK.

1.—ELEMENTARY GREEK. Five hours credit. First semester, at 9:30. Introductory course, covering the forms, syntax, and vocabulary necessary as a foundation for reading the literature. Sterling.

2.—XENOPHON'S ANABASIS. Five hours credit. Second semester, at 9:30. Application of principles learned in the preceding course, with a study of Xenophon's life and works. Sterling.

3.—HOMER'S ILIAD. Three hours credit. First semester, at 10:30. Reading of as much as possible in the original, and the rest in translation. Study of Homeric forms and versification. Wilcox.

4.—PLATO'S APOLOGY, CRITO, and selections from the Phædo and Symposium. Three hours credit. Second semester, at 10:30. Study of the life and work of Socrates. Wilcox.

5.—STORIES AND LEGENDS. Two hours credit. First semester, at 2:30. Mythology in the original Greek. Aims to give the student a knowledge of the many stories of gods, heroes, and men that have come down to us from Greek authors. Prerequisite, course 1. Wilcox.

6.—HERODOTUS. Two hours credit. Second semester, at 10:30. Reading of as much as possible in the original, and the rest in translation. Study of style and influence of Herodotus. Wilcox.

7.—GREEK TRAGEDY. Three hours credit. First semester, at 9:30. The Antigone of Sophocles and Iphigenia in Tauris of Euripides. Study of the Greek theater and dramatic form. Wilcox.

8.—DEMOSTHENES. Three hours credit. Second semester, at 3:30. The Philippics and Olynthiacs. Study of the life and times of Demosthenes. Wilcox.

51.—ELEMENTARY GREEK. Five hours credit. First semester, at 1:30. The same as course 1, except that more work will be required. Sterling.

52.—XENOPHON'S ANABASIS. Five hours credit. Second semester, at 1:30. The same as course 2, except that more will be read. Sterling.

53.—HOMER'S ILIAD. Three hours credit. First semester, at 11:30, or by appointment. Reading of the whole book in the original, with critical study of select portions. Study of the Epic and Homeric life and times. (Not given in 1916-'17.) Wilcox.

54.—PLATO'S GORGAS or REPUBLIC. Three hours credit. Second semester, at 2:30, or by appointment. Outside reading of other dialogs of Plato. Study of the life and thought of his time. (Not given in 1916-'17.) Wilcox.

55.—LYRIC POETRY. Two hours credit. First semester, at 3:30, or by appointment. Selections from Elegiac, Iambic, and Melic poetry. (Not given in 1916-'17.) Wilcox.

56.—GREEK COMEDY. Two hours credit. Second semester, at 11:30, or by appointment. The Clouds and Frogs of Aristophanes. Study of the origin and development, form and content of Greek comedy. (Not given in 1916-'17.) Wilcox.

57.—HOMER'S ODYSSEY. Three hours credit. First semester, at 11:30, or by appointment. Reading of the whole book in the original, with critical studies of select portions. Wilcox.

58.—ALEXANDRIAN LITERATURE. Three hours credit. Second semester, at 2:30, or by appointment. Theocritus, Apollonius Rhodius, and the Anthology. Study of pastoral poetry and the late epic, and their influence on Latin and later poetry. Wilcox.

59.—THUCYDIDES. Two hours credit. First semester, at 3:30, or by appointment. Reading of as much as possible in the original, and the rest in translations. Studies in his style and historical method compared with Herodotus and later and modern historians. Wilcox.

60.—ARISTOTLE. Two hours credit. Second semester, at 11:30, or by appointment. The Poetics, and selections from the Politics and Ethics. Study of Aristotle's place in the history of thought. Wilcox.

FOR STUDENTS OF THE NEW TESTAMENT.

12.—ELEMENTARY NEW TESTAMENT GREEK. Five hours credit. Second semester, at 10:30. An introductory course for students who have no knowledge of Greek and wish to learn to read the New Testament in the original. Sterling.

13.—NEW TESTAMENT I. Two hours credit. First semester, at 10:30. Reading of as much of the New Testament in the original as possible. Prerequisite, course 12, or 1 and 2. Sterling.

63.—NEW TESTAMENT II. Two hours credit. First semester, at 8:30. The same as course 13, except that more work will be required. Sterling.

FOR STUDENTS OF ENGLISH AND NATURAL SCIENCES.

61.—THE GREEK IN ENGLISH. Three hours credit. First semester, at 8:30. A study of English etymology, with especial reference to Greek. Only so much Greek is studied as is necessary for the end in view. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

65.—GREEK POETRY IN TRANSLATIONS. Three hours credit. First semester, at 11:30. The epic and lyric poetry of the classic and Alexandrian ages. Study of form and content and influence on later poetry. Wilcox.

66.—THE GREEK DRAMA IN TRANSLATIONS. Two hours credit. Second semester, at 11:30. Ten to twelve dramas of Æschylus, Sophocles, Euripides and Aristophanes are read and discussed from the points of view of form and content and influence on later and modern dramas. Wilcox.

68.—GREEK PROSE MASTERPIECES IN TRANSLATIONS. Three hours credit. Second semester, at 2:30. Study of the form and content and influence of the principal works of the historians, orators, and philosophers; especially Herodotus, Thucydides, Demosthenes, and Plato. Sterling.

69.—GREEK ARCHITECTURE. Two hours credit. First semester, at 11:30. This course includes the fundamental principles of all styles, with special reference to the survivals and revivals of Greek elements. The result ought to be a knowledge of all historic styles, and not simply the Greek. Wilcox.

70.—GREEK SCULPTURE AND PAINTING. Three hours credit. Second semester, at 11:30. This course includes, for purposes of comparison and appreciation, a summary view of the sculpture and painting of later and modern times. Wilcox.

HISTORY AND POLITICAL SCIENCE.

Professor HODDER.
Professor BECKER.
Associate Professor PATTERSON.
Associate Professor DYKSTRA.
Associate Professor CRAWFORD.
Associate Professor DAVIS.
Assistant Professor MOORE.

EQUIPMENT. The University library is supplied with all the important secondary authorities and with a considerable amount of source material. The latter includes the *Monumenta Germaniæ Historica*, the *Scriptores Rerum Italicarum*, the *Parliamentary History* and *Hansard's Debates*, the *Journals of the Lords and Commons*, the *British Statutes at Large*, the *Rolls Series*, the *Reports of the English Historical MSS. Commission*, and several series of the *Calendars of State Papers*. The library also contains such periodical publications as the *Annual Register*, *Gentleman's Magazine*, *Nile's Register* and *De Bow's Review*. The sets of congressional debates, American state papers and Kansas state documents are complete. The set of congressional documents begins with the second session of the twenty-eighth Congress. The supply of wall maps for classroom use is exceptionally large.

ADVICE AS TO CHOICE OF COURSES. The plan of the department is to furnish general courses for long historical periods, a series of intensive courses for shorter periods, and a limited number of courses in special fields. The

courses in mediæval and English history serve as an introduction to all the work of the department. The general courses in modern European and American history are suited to the needs of students who do not intend to specialize in history, and the general course in one of the two fields may be taken to advantage by those intending to specialize in the other. A reading knowledge of French and German is advantageous to upper-class students of history and political science and indispensable to graduates. Students intending to take a major part in this field should, early in their course, consult the instructors in the department in regard to the best arrangement of their work.

HISTORY.

1.—**MEDIÆVAL HISTORY I.** Three hours credit. First semester, M. W., at 8:30, and third hour by appointment. A history of Europe from the barbarian invasions to the crusades. A fundamental course introductory to all the work in European history. Lectures, quizzes, collateral reading, and reports. Patterson.

2.—**MEDIÆVAL HISTORY II.** Three hours credit. Second semester, M. W., at 8:30, and a third hour by appointment. Covers the history of Europe from the crusades to the beginning of the sixteenth century. Lectures, quizzes, collateral reading, and reports. Continues and should be preceded by mediæval history I. Patterson.

3.—**ENGLISH HISTORY.** Five hours credit. First semester, at 9:30 and 10:30; second semester, at 9:30 and 10:30. Traces the development of England, Scotland, and Ireland with emphasis upon the growth of economic, social, and political institutions. Recitations and occasional lectures. Not open to students who have entrance credit for English history. Crawford.

4.—**MODERN EUROPEAN HISTORY I.*** Three hours credit. First semester, at 1:30. A general survey of European development from 1500 to 1715. Continues the course in mediæval history. Becker.

5.—**MODERN EUROPEAN HISTORY II.*** Three hours credit. Second semester, at 1:30. Continues the preceding course from 1715 to 1900. Becker.

6.—**AMERICAN HISTORY.** Five hours credit. Both semesters, at 8:30. A general survey of American history from the discovery to the present time. Same as courses 7 and 8. Not open to students who have entrance credit in American history. Davis.

7 *a* and *b*.—**AMERICAN HISTORY I.** Five hours credit. First semester, *a*, three hours, at 9:30, and *b*, two hours, at 9:30. A general course, covering the period in the three-hour course to 1789, and in the two-hour course to 1763. Not open to students who have entrance credit for American history. Davis.

8 *a* and *b*.—**AMERICAN HISTORY II.** Five hours credit. Second semester, *a*, three hours, at 9:30, and *b*, two hours, at 9:30. Continue courses 7 *a* and *b* from 1789 and 1763, respectively, and preferably preceded by them. Davis.

50.—**GREEK HISTORY.** Two hours credit. First semester, at 10:30. The course will trace the political and intellectual development of the Greeks and emphasize social and economic changes. Lectures, quizzes, and collateral reading. Patterson.

51.—**ROMAN HISTORY.** Two hours credit. Second semester, at 10:30. A general survey, in which the period of the late republic and early empire receives special attention. Continues but is not necessarily preceded by Greek history. Patterson.

52.—**MEDIÆVAL CULTURE.** Two hours credit. First semester, at 9:30. A survey of the intellectual development of Europe from Augustine to Dante, including such subjects as mediæval literature, scholasticism, the universities, architecture, and the rise of the vernacular languages. Must be preceded by courses 1 and 2. (Not given in 1916-'17.) Patterson.

53.—**MEDIÆVAL INSTITUTIONS.** Two hours credit. First semester, at 9:30. Growth of political and ecclesiastical institutions during the feudal

period, and a detailed analysis of the organization of society in the twelfth and thirteenth centuries. Must be preceded by courses 1 and 2. Patterson.

54.—ITALIAN RENAISSANCE. Two hours credit. Second semester, at 9:30. A survey of the political, social, economic, intellectual, and artistic development of the Italian people from the fourteenth to the sixteenth centuries. Must be preceded by courses 1 and 2. (Not given in 1916-'17.) Patterson.

55.—THE PROTESTANT REVOLT. Two hours credit. Second semester, at 9:30. After a review of the social, economic, and intellectual antecedents of the movement in Germany, the career of Luther and the progress of the revolt to the Peace of Augsburg will be traced. Must be preceded by courses 1 and 2. Patterson.

56.—ENGLISH INSTITUTIONS I. Two hours credit. First semester, at 8:30. Treats of the Anglo-Saxon government, the foundations of parliament, the central and local government, the judiciary, feudalism, the manorial system and gilds. Lectures, reports, and collateral reading. (Not given in 1916-'17.) Crawford.

57.—ENGLISH INSTITUTIONS II. Two hours credit. Second semester, at 8:30. Treats of the Tudor absolutism, the Reformation, the struggle between the crown and parliament, with special emphasis upon the nineteenth century. Continues and must be preceded by English institutions I. (Not given in 1916-'17.) Crawford.

58.—HISTORY OF THE COMMON LAW I. Two hours credit. First semester, at 8:30. Treats of the fundamental principles of Anglo-Saxon law and procedure, the transition to common law, the growth of the judiciary, and the general principles of status and of real property. Primarily designed for students preparing for law, journalism, and business. Crawford.

59.—HISTORY OF THE COMMON LAW II. Two hours credit. Second semester, at 8:30. Treats of the general principles of personal property, contracts, torts, crimes, and civil and criminal procedure. Continues and must be preceded by history of common law I. Crawford.

60.—FRENCH REVOLUTION I. Two hours credit. First semester, at 1:30. Devoted mainly to a study of the institutions of France under the old régime, and of the movement for reform prior to the Revolution. Becker.

61.—FRENCH REVOLUTION II. Two hours credit. Second semester, at 1:30. A study of revolutionary movements and institutional changes in France from 1789 to 1804. Open to students who have had either course 5 or course 60, and to others upon permission of the instructor. Becker.

62.—EUROPE IN THE NINETEENTH CENTURY I. Three hours credit. First semester, at 2:30. The history of the rise and overthrow of the Napoleonic empire and of the period of the Restoration. Prerequisites, course 5 or course 61. Becker.

63.—EUROPE IN THE NINETEENTH CENTURY II. Three hours credit. Second semester, at 2:30. History of Europe with special emphasis upon the liberal régime in England and France, 1830-'48, the revolutionary movement of 1848, the second empire in France, and the reconstruction of Europe, 1860-'76. Prerequisites, courses 5 or course 62. Becker.

64.—AMERICAN COLONIAL HISTORY. Three hours credit. First semester, at 2:30. This course covers the discovery of America, the period of Spanish and French exploration, and the origin and development of the English colonies. Political science 82 may be taken to advantage at the same time. Hodder.

65.—THE REVOLUTION AND THE CONSTITUTION. Three hours credit. Second semester, at 2:30. A study of the causes and results of the American Revolution and of the formation of the constitution. A continuation of course 58, but not necessarily preceded by it. Hodder.

66.—PRESIDENTIAL ADMINISTRATIONS I. Five hours credit. First semester, at 3:30. The political and constitutional history of the United States from 1789 to 1840. A topical treatment of the most important phases of American history. Should be preceded by political science 82. Hodder.

67.—PRESIDENTIAL ADMINISTRATIONS II. Five hours credit. Second semester, at 3:30. The political and constitutional history of the United States from 1840 to 1900. The causes and results of the Civil War. Continuation of course 60, but not necessarily preceded by it. Hodder.

POLITICAL SCIENCE.

10.—AMERICAN GOVERNMENT.* Five hours credit. First semester, at 10:30, 11:30, and 1:30; second semester, at the same hours. A systematic study of the development and structure of American government, national, state, and local, with emphasis upon actual workings. Dykstra and Moore.

80.—PRINCIPLES OF POLITICAL SCIENCE. Three hours credit. First semester, at 9:30. Deals with the fundamental principles of political science: the theory of the state, its origin, development, powers, and organization; the classification of states, and questions of law, rights and citizenship. Dykstra.

81.—EUROPEAN GOVERNMENT. Three hours credit. First semester, at 11:30. An examination of the constitutions and political systems of the leading European states. Davis.

82.—AMERICAN CONSTITUTIONAL LAW. Two hours credit. Second semester, at 2:30. A study of the judicial construction of the constitution of the United States from the political rather than from the legal standpoint. Recitations. Hodder.

83.—INTERNATIONAL LAW. Three hours credit. First semester, at 10:30. A statement of the principles of public international law, including the Hague convention, and supplemented with a study of cases and official documents. Moore.

84.—MUNICIPAL GOVERNMENT. Three hours credit. Second semester, at 9:30. A comparative study of the government of cities in Europe and America, their relation to the central government, their organization and administration. Dykstra.

85.—CONTEMPORARY DIPLOMACY. Three hours credit. Second semester, at 11:30. A systematic study of the controlling factors in international relations, the methods of diplomatic procedure, the course of contemporary world politics and the diplomatic problems involved in the War of 1914. Davis.

86.—POLITICAL PARTIES. Two hours credit. First semester, at 11:30. The place of parties in democratic government; organization and development of party machinery; abuses of party organization, and the attempts to subject parties to popular control. Dykstra.

87.—AMERICAN STATE GOVERNMENT. Two hours credit. Second semester, at 11:30. The development of state constitutions in the United States, the problems of state government and an analysis of the various projects for reorganization and reform. Dykstra.

88.—ELEMENTARY LAW. Three hours credit. Second semester, at 10:30. A study of the fundamental principles of the common law, designed to give familiarity with common legal terms and court procedure and emphasizing particularly such subjects as torts, contracts, and real and personal property. Moore.

HOME ECONOMICS.

Professor SPRAGUE.
Miss DOWNEY, Instructor.
Miss ALLEN, Instructor.
Miss GWINN, Instructor.

EQUIPMENT. The department occupies nine rooms in Fraser Hall. These include two food laboratories, one chemical laboratory, a textile and sewing room, and two lecture rooms with an experimental and demonstration kitchen in connection with one of them. These laboratories are equipped both for general class work and for research. The library contains the standard books on the subject.

ADVICE TO STUDENTS. The courses of instruction given in this department are planned to meet the needs of three classes of students: (a) those who desire a knowledge of the general principles and facts of home economics; (b) those who wish to major in home economics for the purpose of teaching the subject in secondary schools and colleges; (c) those who are interested in preparing to become dietitians, or to follow other professions.

Students who belong to groups (b) and (c) are advised to begin their work in the department as early as possible in order to secure a proper sequence of the elementary and advanced subjects; to have a desirable distribution of courses; to become thoroughly familiar with the subject matter before undertaking the courses in the teaching of home economics and practice teaching; and, in the case of those who wish to do more advanced work, to provide for the necessary training in the fundamental sciences. Such students should consult the head of the department before arranging their courses.

For general students the major in the department is as follows:

MAJOR IN HOME ECONOMICS.

(*Freshman-Sophomore.*)

| PREREQUISITE. | PRESCRIBED. | Hrs. | SUGGESTED. | Hrs. |
|------------------|---|------|----------------|------|
| | 1. Home architecture and sanitation..... | 2 | 0. Sewing..... | 0 |
| Design 1..... | 2. Home decoration..... | 2 | | |
| Chemistry 1..... | 3. Selection and preparation of food..... | 5 | | |

(*Junior-Senior.*)

| | | | | |
|--|--|-----|--|-----|
| Selection and preparation of food..... | 50. Economic uses of food.. | 5 | 51. Dietetics..... | 5 |
| | 71. Textiles..... | 3 | 72. a Clothing (design).... | 3 |
| | | | b Clothing (mfg.)..... | 2 |
| Economic uses of food or... Textiles..... Home architecture, etc..... Physiology..... Economics 1..... Sociology..... | 80. Home administration.... | 3 | 81. Public aspects of the household..... | 3 |
| Economic uses of food..... Organic chemistry..... Bacteriology, or..... Botany 4, or..... Dietetics..... | 52. Special problems in home economics.... | 3-5 | 53. Special problems in home economics.... | 3-5 |

0.—PLAIN SEWING AND GARMENT MAKING. No credit. First semester, Tu. Th., 1:30 to 4:30. Principles and practice in hand and machine sewing, drafting, and making of simple garments. This course is offered because the majority of students have not had the opportunity of taking it in the high school. It is prerequisite to course 72. Fee, \$1. Allen.

1.—HOME ARCHITECTURE AND SANITATION. Two hours credit. Both semesters, 9:30 and 1:30. A study of the evolution of the house; the development of its functions as a place of shelter, defense, and the center of family life; types of domestic architecture; the planning and care of the house with regard to the comfort, convenience, and health of the family. Gwinn.

2.—HOME DECORATION. Two hours credit. Both semesters, 11:30 and 2:30. The theory of color and decoration and its application in home decoration; materials suitable for various purposes in the home; furnishings from an economic, sanitary and artistic standpoint. Prerequisite or concurrent, design 1. Gwinn.

3.—SELECTION AND PREPARATION OF FOOD. Five hours credit. Both semesters, M. W. F., 8:30 to 10:30, and Tu. Th., 9:30; M. W. F., 10:30 to 12:30, and Tu. Th., 10:30. An experimental study of the different classes of nutrients, with the application of this knowledge in the selection and preparation of foods. Prerequisite, chemistry 1. Advised, zoölogy 1, physiology 1. Fee, \$5. Sprague, Allen, Gwinn.

50.—ECONOMIC USES OF FOOD. Five hours credit. Both semesters, Tu. Th., 1:30 to 4:30; M. W., 1:30 to 2:30. The principles of food preserva-

tion, marketing and domestic storage; the planning of meals to prevent waste, give variety and regulate cost according to food values. Prerequisite, course 3. Fee, \$4. Downey.

51.—DIETETICS. Five hours credit. Second semester, M. W. F., 10:30; and Tu. Th., 10:30 to 12:30. The principles of diet; the relation of food to health; food habits and dietary standards; the dietetic treatment of diseases; experimental study of special problems in nutrition. Prerequisites, economic uses of food, organic chemistry, physiology 1. Physiological chemistry advised. Fee, \$2.50. Downey.

52.—SPECIAL PROBLEMS IN HOME ECONOMICS I. Three or five hours credit. First semester. A critical study of common theories and practice in food preparation and other home activities, with experimental investigation of special problems. Prerequisites, economic uses of food, elementary organic chemistry; bacteriology, or botany, or dietetics. Qualitative and quantitative chemistry advised. Fee, \$3 or \$5. Sprague.

53.—SPECIAL PROBLEMS IN HOME ECONOMICS II. Three or five hours credit. Second semester. Fee, \$3 or \$5. The work of each student will be under the direction of the member of the staff in charge of the subject chosen. A continuation of course 52.

60.—FOOD AND NUTRITION. Three hours credit. Second semester, 11:30. The purpose of this course is to present in a nontechnical way the more elementary problems of food and nutrition with reference to the food requirements of man and the considerations which should underlie our judgment of the nutritive value of food. Designed for the general student. Downey.

65.—PUBLIC ASPECTS OF THE HOUSEHOLD. Three hours credit. Second semester, 9:30. This course is designed to give the student a view of the broader aspects of home economics as it is related to the welfare of the community. Special emphasis will be laid upon the state and federal laws which are most directly connected with the home. Designed especially for the general student. Downey.

71.—TEXTILES. Three hours credit. First semester, M. W., 8:30 to 10:30; F. 8:30. A study of the production and manufacture of textiles from the standpoint of the consumer; the properties and uses of the different textile fibers and fabrics; tests for adulteration; principles of cleaning fabrics. Fee, \$2. Allen.

72a.—CLOTHING DESIGN. Three hours credit. Second semester, 2:30. A study of the history of costume with emphasis upon the factors influencing its design; the psychology of fashion; the hygiene of dress. Prerequisite, design II. Gwinn.

72b.—CLOTHING MANUFACTURE. Two hours credit. Second semester, 2:30 to 5:30. Laboratory practice in carrying out designs; economic problems of the construction of clothing at home; economic and sociological phases of the clothing industry. Prerequisites, course 0 or equivalent, and 72a. (72a may accompany 72b.) Fee, \$2. Allen.

80.—HOME ADMINISTRATION. Three hours credit. Second semester, 10:30. A study of the home as a social unit and a classification of its problems; a brief history of the changes that have come in the work of women in the home; the economic and sociological value of home-making; the organization of the household, division of the income, general principles of buying. Prerequisites: economic uses of foods, or textiles; home architecture and sanitation; physiology 1, sociology 1, economics 1, or 90. Advised, zoölogy 4a and 4b. Sprague.

JOURNALISM.

Professor THORPE.
Associate Professor FLINT.
Assistant Professor EVANS.
Mr. BROWN, Assistant Instructor.

Men and women intending to enter newspaper work as a profession or as a stepping-stone to higher literary endeavor are here given the opportunity for that specialized training which has long been accorded other professions. The department offers technical courses in the Sophomore, Junior, and Senior years, makes requirements as to preparatory courses in the Freshman year, and recommends supplementary courses to be pursued during the four years.

Students intending to do their major work in this field, and particularly those planning to do graduate work in journalism, should consult the faculty of the department as early as possible.

PRACTICAL WORK. The *University Daily Kansan*, published by students of the University, affords every opportunity for students to put the theory of the classroom into practice. From reporter to editor-in-chief, the student learns at first hand the organization of the newspaper office, becomes familiar with the mechanical, economic, and ethical problems, and acquires speed and accuracy in reportorial work and editorial supervision. Instruction in business management, particularly the science of cost finding, is emphasized.

EQUIPMENT. The laboratory of the department has all the facilities that go to make up a modern "back office." It is equipped with typesetting machines, linotypes and a monotype, a complete composing room, a book and newspaper press, and a battery of jobbers.

Reporters' desks in the "front office" are equipped with typewriters. The library of the department, containing a wide assortment of books on all phases of journalism, is made easily accessible in a room convenient to the news rooms and offices.

Thirty-six metropolitan dailies, representing the great newspaper personalities of the world, are received, together with the leading national weeklies and magazines. Five hundred Kansas papers also reach the laboratory regularly. These current periodicals are the textbooks of the various classes.

FEES. Each student enrolled in the department pays a fee of fifty cents, to cover, in part, the cost of newspapers and magazines used in the daily work.

DESCRIPTION OF COURSES.

1.—**THE NEWSPAPER.*** Three hours credit. Both semesters. First semester, at 10:30 and 11:30; second semester, at 9:30. Materials and methods. The news story. The human-interest story and its kinship to the short story. The feature. The editorial. Gathering and writing campus news. Prerequisites, rhetoric 1 and 2. Evans.

2.—**THE NEWSPAPER.*** Three hours credit. Second semester, at 10:30 and 11:30. Organization of the office; function of departmental heads, editor-in-chief, managing, news, city, and telegraph editors; sub-editors, financial, sporting, society, etc.; copy-readers, reporters. The press associations; women in newspaper work; law of libel and copyright. Practical work daily in reporting. A continuation of 1—the newspaper. Evans.

3.—**COMPARATIVE JOURNALISM.*** Two hours credit. First semester, at 11:30. Intensive study of great newspaper personalities, including twenty-four newspapers representative of all types in American journalism, with auxiliary lectures on journalism in England, France, Germany, and the Orient. Flint.

4.—**HISTORY OF AMERICAN JOURNALISM.*** Two hours credit. Second semester, at 11:30. A comprehensive view from the early beginnings in Massachusetts, through the succeeding periods, to the present. Special studies of the careers of great American editors. Must be preceded or accompanied by 2—the newspaper. Flint.

51.—**THE SHORT STORY.** Three hours credit. First semester, at 8:30. This course will call for the reading of 200 approved short stories and the

intensive study of selected specimens. As in the course in magazine writing, the student will be expected to produce the form for himself, with a view to possible publication. In both of these courses the student is expected to develop sound, critical judgment, with regard both to the literary and the commercial merits of matter under consideration. Evans.

52.—MAGAZINE WRITING. Three hours credit. Second semester, at 8:30. A close study of the work of successful magazine writers, together with practice in the writing of articles. These, whenever they have enough distinction to warrant it, will be submitted to magazines. Evans.

53.—INTERPRETATION OF THE NEWS. Two hours credit. First semester, at 10:30. Editorial writing; a study of current events. The object of the course is to train students to seize upon the essentials of daily events and comment on them intelligibly and intelligently. Flint.

54.—INTERPRETATION OF THE NEWS. Two hours credit. Second semester, at 10:30. Continuation of course 53, with emphasis upon practical work of writing editorial matter for publication. Flint.

55.—ADVERTISING I. Three hours credit. First semester, at 11:30. A study of the fields for newspaper, magazine, bill-board, street-car, and novelty advertising. The organization of the advertising business. Good and bad advertising copy. The mathematics of returns. (With practice in advertising salesmanship for the members of the class who desire it.) Flint.

56.—ADVERTISING II. Three hours credit. Second semester, at 11:30. The psychology of advertising. Application of theory to practice by the preparation of advertising copy and the planning of advertising campaigns. (With practice in advertising salesmanship for the members of the class who desire it.) Flint.

57.—NEWSPAPER ADMINISTRATION I. Two hours credit. First semester, at 9:30. A study of the business side of newspaper publishing, designed to familiarize the student with the equipment of a newspaper plant, the expenses of publishing a paper, its sources of income, and the operation of a job-printing establishment. Flint.

58.—NEWSPAPER ADMINISTRATION II. Two hours credit. Second semester, at 9:30. A continuation of 57, with special emphasis on the science of cost finding and efficiency. Flint.

59.—EDITORIAL PROBLEMS AND POLICIES I. Three hours credit. First semester. Ethics of journalism, problems of the editor, his relation to the public. The managing editor, outlining news campaigns; the news editor, his editorial capacity in display, quantity and position of news; and kindred problems. Lectures on class journalism, the varied appeal. Thorpe.

60.—EDITORIAL PROBLEMS AND POLICIES II. Three hours credit. Second semester. Continuation of 59. Thorpe.

61.—EDITORIAL PRACTICE I. Two hours credit. First semester. Practical work in collecting, preparing, and editing matter for dailies, weeklies, and class periodicals. Evans.

62.—EDITORIAL PRACTICE II. Two hours credit. Second semester. Continuation of 61. Evans.

65.—THE MECHANICS OF PRINTING. No credit, but required of journalism majors. Both semesters. Two lectures and eight hours laboratory weekly. Students are taught to set type, make up and lock up forms, etc. This class will work on the mechanical end of the University publications. Brown.

66.—THE ART OF PRINTING. No credit, but required of journalism majors. Both semesters. Two lectures and five hours laboratory. Lectures on history and development of printing, with practical work in designing advertisements, title pages, etc., and study of color schemes. Brown.

NOTE.—Courses 65 and 66 are designed, first, to give the student a working knowledge of the mechanical department of a newspaper, that he may be better fitted for editorial supervision; second, to equip better those students who plan to own country papers; third, to reinforce rhetorical principles of mass, proportion, accuracy, emphasis, contrast, harmony, unity, and variety, by practical work with type faces.

LATIN LANGUAGE AND LITERATURE.

Professor WALKER.
Associate Professor OLIVER.
Associate Professor MURRAY.
Assistant Professor CRESSMAN.

EQUIPMENT. The department is well supplied with wall maps, books of reference and supplementary reading for all courses, photographs, and a large collection of antiquities illustrating many phases of Roman life. Its library equipment includes the Corpus of Latin Inscriptions and complete sets of all important classical journals. In addition to the general illustrative material of the classical museum, the department has about 750 large mounted photographs and many smaller unmounted ones. These are supplemented by a considerable collection of bronze, marble, and terra cotta antiquities.

ADVICE AS TO CHOICE OF COURSES. Those who intend to take only five hours of Latin to satisfy a group requirement must take course 1 if they have entered with no Latin, course 2 if with one unit, course 3 if with two units, course 4 if with three units. If they have entered with four units, they may select any five hours out of courses 5, 6, and 7.

Except by special arrangement, those who intend to major in Latin must complete courses 5, 7, 9, and 13 before electing Junior and Senior courses. Course 10 is also required, and should be taken early. Course 50 should be a part of the Junior work.

Those who expect recommendation as teachers of Latin without majoring in the department must, in general, have taken at least twenty-five hours of Latin beyond course 4, including courses 5, 7, 9, 10, and 13. Education 87 and 87a may be included in this amount. The exact requirement depends somewhat on the character of the work.

Those who wish to do the best work in Latin, especially those who look forward to graduate study in the subject, will need Greek and a reading knowledge of French and German.

PREPARATORY LATIN. Although College classes are offered which correspond to each year of the high-school Latin course, these classes are open only to those who enter with fifteen accredited entrance units. Entrance units may be made good in the Oread School. Those who submit as entrance units Cæsar and Cicero without Latin composition are conditioned in composition and must make the deficiency good either by examination or in the Oread School.

1.—**ELEMENTARY LATIN.** Five hours credit. First semester, at 10:30. Though intended as a preparation for the further study of Latin, this course is planned largely for those whose chief interest is in English or the modern languages; general principles of language structure and development and the influence of Latin on English are emphasized as much as possible. Open to all who have had no Latin in the high school. Cressman.

2.—**CÆSAR** (four books). Five hours credit. Second semester, at 8:30. Weekly exercises in Latin composition. Open to those who have had course 1 or its equivalent and have not read Cæsar in the high school. Cressman.

3.—**CICERO** (six orations). Five hours credit. First semester, at 9:30. Weekly exercises in Latin composition. Open to those who have had course 2 or its equivalent and have not read Cicero in the high school. Oliver.

4.—**VERGIL'S ÆNEID** (six books). Five hours credit. First semester, at 8:30; and second semester, at 9:30. With the study of mythology and careful practice in metrical reading. The chief emphasis will be laid on the literary side of the work. Open only to those who have had three units of Latin, not including Vergil. First semester, Cressman; second semester, Oliver.

5.—**CICERO** (De Senectute). Three hours credit. First semester, at 9:30 and 11:30; second semester, at 9:30. With prose composition and a thorough review of the grammar. Open to those who have had four units of Latin, recommended to all who expect to take further courses in Latin, and required of all who expect to prepare for teaching Latin. First semester, at 9:30, Murray; at 11:30, Oliver.

6.—LIVY (one book). Two hours credit. Both semesters, at 9:30. This course is intended to accompany course 5, but may be omitted by well-prepared students. First semester, Murray; second semester, Cressman.

7.—HORACE (Odes). Three hours credit. Second semester, at 11:30. With careful practice in metrical reading. The chief emphasis is laid on the literary side of the work. Must be preceded by course 4; should be preceded by either 5 or 6. Murray.

8.—TERENCE (two plays). Two hours credit. Second semester, at 8:30. Must be preceded by course 5. Intended to accompany course 7. Those who must choose between 7 and 8 are advised to take 7. Those who elect it when qualified to elect course 51 will be required to read an additional play. Murray.

9.—CICERO'S LETTERS. Three hours credit. First semester, at 10:30. The chief emphasis is laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived. Must be preceded by five hours beyond course 4. Walker.

10.—HISTORY OF ROMAN LITERATURE.* Two hours credit. Second semester, at 11:30. Mackail's Latin Literature, supplemented by lectures and assigned reading in English translations of the more important authors. No Latin preparation required. Oliver.

11.—HORACE (Satires and Epistles). Two hours credit. Second semester, W. F., at 10:30. Courses 11 and 12 may well be taken together. Prerequisite, eight hours beyond course 4. Murray.

12.—ROMAN PRIVATE LIFE. One hour credit. Second semester, M., at 10:30. Johnston's Private Life of the Romans, supplemented by occasional lectures and the use of illustrative material. Prerequisite, five hours beyond course 4. Oliver.

13.—LATIN COMPOSITION. Two hours credit. First semester, at 11:30; and second semester, at 10:30. Part I or part II of Nutting's Advanced Latin Composition, or an equivalent. Intended to accompany courses 11 and 12, but may be taken earlier by well-prepared students, the only necessary preparation being given in course 5. Required of all who wish a recommendation from the department as teachers of Latin. First semester, Cressman; second semester, Walker.

50.—ADVANCED LATIN COMPOSITION. Two hours credit. First semester, at 1:30. Prerequisite, course 13. Required as part of major. Walker.

Each of the following reading courses, 51 to 58, inclusive, must be preceded by at least twelve hours from courses 5 to 13, inclusive.

51.—PLAUTUS. Two hours credit. First semester, at 10:30. Murray.

52.—VERGIL'S ECLOGUES AND GEORGICS. Two hours credit. Second semester, at 1:30. Walker.

53.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours credit. (Not given in 1916-'17.)

54.—PLINY'S LETTERS. Two hours credit. (Not given in 1916-'17.)

55.—LUCRETIIUS. Three hours credit. (Not given in 1916-'17.)

56.—THE ANNALS OF TACITUS. Three hours credit. Second semester, at 8:30. Murray.

57.—JUVENAL. Three hours credit. (Not given in 1916-'17.)

58.—LITERATURE OF THE EMPIRE. Three hours credit. First semester, at 8:30. A study of the history of literature under the empire, supplemented by the reading of portions of the most important works. Oliver.

59.—ROMAN POLITICAL INSTITUTIONS. Three hours credit. First semester, at 1:30. A study of the development and form of the Roman governmental system through the republic and the early empire. The course will be conducted by lectures and assigned readings. Prerequisite, three years of high-school Latin or their equivalent. Murray.

60.—CÆSAR'S GALLIC CAMPAIGNS. Three hours credit. Second semester, at 1:30. A critical study of the Gallic War, with especial reference to mili-

tary, historical, and geographical questions. The course is intended primarily as an introduction to the methods of the graduate seminar, and secondarily as a practical course for teachers. Open to Seniors. Walker.

61.—VERGIL. Three hours credit. A rapid survey of the contents of the *Æneid*, with a study of the motives of the poem and of Vergil's method of handling his material. A critical study of a few passages which involve difficulties of interpretation or of textual criticism. It is recommended that this course be preceded or accompanied by course 52. Open to Seniors. (Not given in 1916-'17.)

LAW.

The following courses in the School of Law are open to College Seniors, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Law as well as in the College, and will be admitted to the classes as first-year law students.

51.—ELEMENTARY LAW. Two and one-half hours credit. First half of first semester.

52.—CRIMINAL LAW. Two and one-half hours credit. First half of first semester.

53.—AGENCY. Two and one-half hours credit. Second half of first semester.

54.—CONTRACTS. Five hours credit. First semester.

55.—BAILMENTS. Two and one-half hours credit. First half of second semester.

56.—TORTS. Two and one-half hours credit. Second half of first semester; also, two and one-half hours, first half of second semester.

57.—SALES. Two and one-half hours credit. First half of second semester.

58.—DAMAGES. Two and one-half hours credit. Second half of second semester.

59.—DOMESTIC RELATIONS. Two and one-half hours credit. Second half of second semester.

60.—BILLS AND NOTES. Five hours credit. Second semester.

61.—SURETYSHIP. Two and one-half hours credit. Second half of second semester.

MATHEMATICS.

Professor VAN DER VRIES.
Professor ASHTON.
Associate Professor MITCHELL.
Assistant Professor STOUFFER.
Assistant Professor JORDAN.
Mr. WHEELER, Instructor.
Mr. LEFSCHETZ, Instructor.
Mr. LARSEN, Instructor.
Mr. HOLZINGER, Instructor.
Mr. STEIMLEY, Instructor.

EQUIPMENT. The department of mathematics has a good collection of models in wood, plaster of Paris, and strings illustrating various theorems of geometry and analysis. The library contains about 2000 volumes relating to mathematics. The department also has in its possession a large collection of elementary textbooks, which is of especial value to prospective teachers, affording an excellent opportunity for comparing various methods of presentation.

ADVICE AS TO CHOICE OF COURSES. The courses in the department are arranged to meet the needs of four classes of students, as follows: (1) those who wish to study mathematics for general culture; (2) those who wish to take mathematics in preparation for advanced work in other departments; (3) those who wish to become teachers of mathematics in secondary schools;

(4) those who wish to specialize with a view to finding a career in teaching and research in mathematics. The courses are arranged in three groups: the elementary group, open to all undergraduates; a more advanced group, open to Juniors, Seniors, and graduate students; and the graduate courses, open only to graduate students. (For a list of the latter courses see the announcements of the Graduate School.)

(1) For general culture all or a part of courses 1 to 9 in proper sequence are recommended; they may be taken two at a time (*i. e.*, 2 and 3, 4 and 5, etc.).

(2) Students whose major work is in another department where mathematics is needed should consult with the head of the department in question regarding the mathematical courses they should elect.

Students in groups (3) and (4) will naturally major in the department.

MAJOR WORK. Under the general laws of the College, students majoring in this department must complete at least 30 hours of mathematics, of which at least 12 hours must be chosen from courses numbered 50 and above. Courses 2 to 7, either 50 or 52, 55, 59, and 62 are required of all students majoring in the department.

(3) Those wishing to qualify for teachers of mathematics in high schools are advised to complete their major by taking at least courses 9, 57, and 60. They are also advised to take some courses in physics and astronomy.

(4) Students desiring to specialize in mathematics should take as many of the remaining courses offered as possible. Such students are advised to gain a reading knowledge of French and German as early in their course as possible. Italian will also be a great help.

1.—**SOLID GEOMETRY.** Two hours credit. Second semester, at 1:30. The usual theorems and constructions of standard textbooks and applications to the mensuration of surfaces and solids. Open to all students who do not offer solid geometry for entrance. Steimley.

2.—**COLLEGE ALGEBRA.** Three hours credit. Both semesters; first semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30, 1:30. Rapid review of elementary algebra; graphic representation; logarithms; determinants; theory of equations; Horner's method of approximation. Stouffer, Holzinger and Steimley.

3.—**PLANE TRIGONOMETRY.** Two hours credit. Both semesters; first semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30. The six trigonometric functions; principal formulas of plane trigonometry, trigonometric equations, solution of triangles, and practical problems. Stouffer, Holzinger and Steimley.

4.—**ANALYTICAL GEOMETRY I.** Two hours credit. Both semesters; first semester, at 10:30 and 11:30; second semester, at 8:30 and 10:30. The straight line, circle, elements of parabola, ellipse and hyperbola. Prerequisites, courses 2 and 3. Van der Vries.

5.—**CALCULUS I.** Three hours credit. Both semesters; first semester, at 10:30; second semester, at 8:30 and 10:30. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates. Open to students who have completed or are taking course 4. Mitchell.

6.—**ANALYTICAL GEOMETRY II.** Two hours credit. Both semesters; first semester, at 11:30; second semester, at 10:30. Conic sections; polar coordinates; loci problems; higher plane curves. Prerequisite, course 4. Ashton.

7.—**CALCULUS II.** Three hours credit. Both semesters; first semester, at 11:30; second semester, at 10:30. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Prerequisites, courses 5 and 6; may be taken at the same time with course 6. Mitchell.

9.—**SOLID ANALYTICAL GEOMETRY.*** Two hours credit. Second semester, at 9:30. Solid analytical geometry of the straight line, plane, and the conicoids. Prerequisite, course 7. Stouffer.

10.—**PROBABILITY AND STATISTICS.*** Three hours credit. Second semester, at 11:30. This course will cover, first, graphical representation of

statistics and the determination of empirical equations; second, the principles of infinite series as applied to annuities, etc., and the development of facility in logarithmic computation; third, the fundamentals of the theory of probability, with applications. Prerequisite, course 2. Van der Vries.

50.—ANALYTIC MECHANICS. Three hours credit. Second semester, at 11:30. This course is recommended to those who desire a more thorough knowledge of the integral calculus and its practical applications. It will include center of gravity, moments of inertia, and the general theory of rectilinear and curvilinear motion in space. A large number of practical problems will be solved. Prerequisites, courses 2 to 7. Students are also advised to precede this course by physics 50. Wheeler.

51.—DIFFERENTIAL EQUATIONS. Three hours credit. First semester, at 10:30. Ordinary differential equations; integration in series; partial differential equations; applications to geometry and physics. Prerequisites, courses 2 to 7. Stouffer.

52.—ADVANCED CALCULUS I. Three hours credit. First semester, at 9:30. Critical review of the fundamental notions of calculus; expansion in series; definite integrals; multiple integrals; line integrals; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

53.—ADVANCED CALCULUS II. Two hours credit. Second semester, at 11:30. Elliptic integrals; Jacobian elliptic functions; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

55.—HIGHER ALGEBRA I. Two hours credit. First semester, at 9:30. A study of selected topics in Fine's College Algebra. The idea of a number field; the development of the number system of algebra; definition of irrational number; fundamental theorems on limits; convergence of infinite series; power series; operations with infinite series; binomial, exponential and logarithmic series; infinite products. Prerequisites, courses 2 to 7. Mitchell.

56.—HIGHER ALGEBRA II. Three hours credit. Second semester, at 9:30. Selected topics in Bocher's Introduction to Higher Algebra. Fundamental properties of polynomials; properties of determinants; theory of linear dependence; systems of linear equations; linear transformations; multiplication of matrices; bilinear forms; properties of polynomials in general. Prerequisites, courses 2 to 7. Mitchell.

57.—COMPLEX NUMBERS. Two hours credit. Second semester, at 8:30. Analytic and geometric properties of complex numbers; conditions of functionality; integration; circular transformation; applications. Prerequisite, course 55. Ashton.

58.—GALOIS'S THEORY OF EQUATIONS. Two hours credit. First semester, by appointment. The application of the method of groups to the study of algebraic equations. Prerequisite, course 55. Ashton.

59.—MODERN GEOMETRY I. Three hours credit. First semester, at 8:30. Fundamental forms; the principle of duality; perspectivity and projectivity between one-dimensional forms; one-dimensional coordinate systems; double ratio; linear transformations; involution; the harmonic properties of the complete quadrangle and quadrilateral. Prerequisites, courses 2 to 7. Van der Vries.

60.—MODERN GEOMETRY II. Three hours credit. Second semester, at 8:30. Two-dimensional coordinates, projective and special, both point and line; pencils and ranges of conics; collineations and introduction to continuous groups of collineations in the plane. Prerequisite, course 59. Van der Vries.

62.—HISTORY OF MATHEMATICS. Two hours credit. First semester, at 11:30. The historical development of elementary mathematics, including trigonometry, analytical geometry, and the calculus. Outlines, assigned readings, and class discussions. Open to Seniors who have had course 7, and to others upon permission of the instructor. Mitchell.

MEDICINE.

College students who have attained at least full Senior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Senior year the entire first year of the medical curriculum. To such students the College will grant the degree of bachelor of arts.

College students who have attained at least full Junior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Junior and Senior years the entire first and second years of the medical curriculum. To such students the College will grant the degree of bachelor of science in medicine.

The subjects, or equivalents, which must have been completed before admission to the Medical School are:

Modern language, 10 hours, preferably German 1 and 2.

Chemistry, 10 hours, including at least 1 and 2.

Physics, 1, 5a and 5b, or 6a and 6b.

Biology, which should include zoölogy 3, and at least one course from zoölogy 1, 2, or botany 3.

To secure this privilege of offering medical work towards the College degree, the student must have spent one full year in residence at the College previous to enrollment in medical courses and must be certified to the Medical School by the Dean of the College as having met all the requirements above named. He must also register in the College as well as the Medical School and be subject to such general regulations of the College Faculty as govern other Juniors and Seniors.

A student who does not fully meet the entrance requirements to the Medical School will enroll in College classes necessary to complete such requirement, after which he may be admitted to the Medical School and enrolled in medical courses, but the aggregate number of hours of such enrollment in the two schools may not exceed that allowed to College students.

Whenever a student has completed the medical work in accordance with the foregoing provisions, the Dean of the Medical School will submit to the Dean of the College a certified statement of that fact accompanied by the recommendation of the Faculty of the School of Medicine that such student be admitted to the appropriate College degree. The name of the candidate will then be sent to the College Faculty as a candidate for that degree.

It should be noted that several of the courses embraced in the first three semesters of the medical curriculum are offered to College students in the various departments concerned.

MUSIC.

Professor SKILTON.

Courses 50 and 51 are College courses and are open to all Juniors and Seniors.

Courses 52 to 60 are courses in the School of Fine Arts and are open to College Juniors and Seniors, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to these courses must register in the School of Fine Arts as well as in the College, and will be admitted to the classes as fine arts students.

50.—APPRECIATION OF MUSIC. Two hours credit. First semester, at 10:30. A course for those who wish to learn to understand music as listeners, without necessarily being performers. The different styles of music are explained and illustrated, with special reference to the University concerts. Skilton.

51.—DEVELOPMENT OF MUSIC. Two hours credit. Second semester, at 10:30. Detailed examination of famous composers, with reference to the history of their time and country. Skilton.

52.—HARMONY. Two hours credit.

53.—HARMONY. Two hours credit.

- 54.—HARMONY. Two hours credit.
 55.—HARMONY. Two hours credit.
 56.—COUNTERPOINT. One hour credit.
 57.—COUNTERPOINT. One hour credit.
 58.—MUSICAL COMPOSITION. One hour credit.
 59.—MUSICAL COMPOSITION. One hour credit.
 60.—INSTRUMENTATION. One hour credit.

PHARMACY.

Professor SAYRE.
 Associate Professor NELSON.

50.—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester. A survey of the field of biochemistry. Lectures, conferences, laboratory work. Three lectures; 9 or more laboratory hours per week. Designed to meet the need of students in chemistry and chemical engineering desiring general and specific information on this subject, and especially of advanced students pursuing courses in botany, zoölogy, hygiene, food analysis and home economics. Prerequisite, general and organic chemistry. Nelson and assistants.

51.—ADVANCED BIOLOGICAL CHEMISTRY. Two, three, or five hours credit. Both semesters. Assigned readings, conferences and reports on selected topics. Sayre and Nelson.

PHILOSOPHY AND PSYCHOLOGY.

Professor HOLLANDS.
 Professor TEMPLIN.
 Professor OGDEN.
 Assistant Professor MITCHELL.
 Assistant Professor DOCKERAY.

EQUIPMENT. This department occupies a suite in the east wing of the new Administration Building, including classrooms, a reading room held jointly with the mathematics department, and the psychological laboratory. The philosophical library includes some 3000 volumes, 2500 of which are on the shelves of the reading room for ready reference by students. The laboratory has twelve rooms equipped both for class work and research.

MAJOR REQUIREMENTS. All students majoring in the department will be required to take the following courses: 1a, 2a, 3, 51a, 70, and 71. Other elections will be determined by the special interests and purposes of the student. When such an arrangement seems expedient, students may satisfy all or part of the requirements for the major in this group, so far as these exceed those for the department major, by the election of allied subjects in other departments. Such students must state, in entering upon their major, to which of the five topics following they wish to give especial attention: (1) General Philosophy; (2) Ethics; (3) Æsthetics; (4) Logic and Methodology; (5) Psychology. Their selection of allied subjects must be made from the corresponding group, as indicated below.

ALLIED SUBJECTS IN GROUPS.

General Philosophy. English 81, Browning and Tennyson; English 82, Carlyle and Emerson; English 83, Milton and His Contemporaries; Greek 4, Plato; Greek 51, The Gorgias or Republic of Plato; Latin, 55, Lucretius; Mathematics 5, 7, Calculus I and II; Physics 5a, 5b, 6a, 6b, General Physics; Physics 50, Mechanics and Heat; Physics 51, Light and Radiant Energy; Physiology 70; Romance 56, French Literature of the Eighteenth Century; Romance 70, Dante; Zoölogy 4b, Development and Heredity.

Ethics. Economics 70, 71, Labor Problems I and II; Economics 91, 92, Value, Price, and Distribution of Wealth; Economics 93, 94, Economic Theory; History and Political Science 80, Principles of Political Science; History and Political Science 83, International Law; Sociology 54, Public Opinion; Sociology 55, Psychological Sociology; Sociology 57, Socialism;

Sociology 58, Anthropology; Sociology 59, Ethnology; Sociology 62, Development of Social Theory; Zoölogy 4b, Development and Heredity.

Esthetics. Design 2, Design; Design 52, History of Painting; Design 58, History of Design; English 85, Technic and Theory of the Drama; Greek 69, Greek Architecture; Greek 70, Greek Sculpture and Painting; Music 50, Appreciation of Music; Music 51, Development of Music; Music 52-57, Harmony and Counterpoint.

Logic and Methodology. Economics 68, Statistics; Mathematics 5, 7, Calculus I and II; Mathematics 10, Probability and Statistics; Physics 5a, 5b, 6a, 6b, General Physics; Physics 50, Mechanics and Heat; Physics 51, Light and Radiant Energy.

Psychology. Anatomy 1, Introductory Anatomy; Anatomy 9, Neurology; Physics 5a, 5b, 6a, 6b, General Physics; Physics 51, Light and Radiant Energy; Physiology; Sociology 54, Public Opinion; Sociology 55, Psychological Sociology; Sociology 58, Anthropology; Sociology 59, Ethnology; Zoölogy 3, Comparative Anatomy; Zoölogy 4b, Development and Heredity; Zoölogy 55, Embryology.

1a.—GENERAL PSYCHOLOGY.* Three hours credit. Both semesters, M. W., at 10:30 and 3:30, and third hour by appointment. A general study of human consciousness and behavior, with reference both to scientific theory and to practical application. This course is a prerequisite to 1b, and to courses 10a, 10b, and 50 to 69, inclusive; but it can be taken at the same time with 1b. It is required for admission to the School of Education. The course is open to students who have taken psychology in high school, as well as to those who have not done so. It should be preceded by elementary courses in the biological and physical sciences. Ogden, Dockeray.

1b.—GENERAL PSYCHOLOGY LABORATORY.* Two hours credit. Both semesters, M. W., 8:30 to 10:30 or 1:30 to 3:30, or at the same hours Tu. Th. Experiments, assigned readings and reports. Supplementary to 1a, and must be preceded or accompanied by it. Dockeray.

3.—ELEMENTARY LOGIC.* Three hours credit. Both semesters, at 9:30 and 2:30. Textbook course for beginners, presenting the elementary principles of deduction, induction, and circumstantial evidence. (N. B.—This course is open to first-year students who are to begin work in law in their Sophomore year.) Mitchell.

4.—INTRODUCTION TO PHILOSOPHY.* Two hours credit. Both semesters, 9:30, 11:30, 2:30. Textbook course for beginners, presenting the general nature of philosophical problems and of the relation of philosophy to science, religion and art. Should be preceded by elementary courses in the biological and physical sciences. Mitchell, Hollands.

10a.—PHYSIOLOGICAL PSYCHOLOGY.* Three hours credit. Second semester, 11:30. A consideration of the mental processes in their connection with the structure and function of the nervous system, and glands of internal secretion. Sensation, perception, feeling and emotion, habit and acquisition of skill, work, fatigue, and sleep, will be among the subjects treated. Prerequisites, for Sophomores, courses 1a and 1b; for Juniors and Seniors, 1a. Dockeray.

10b.—PHYSIOLOGICAL PSYCHOLOGY LABORATORY.* Two hours credit. Second semester, Tu. Th., 10:30 to 12:30. Experiments supplementary to 10a, which must precede or accompany this course. Dockeray.

50a.—PSYCHOLOGY OF THOUGHT. Three hours credit. First semester, at 11:30. A study of the higher mental processes, with special reference to attention, association, relation, memory, imagination, conception, reasoning, and belief. Lectures, assigned readings, and reports. Must be preceded by course 1a. Ogden.

50b.—PSYCHOLOGY OF THOUGHT LABORATORY. Two hours credit. First semester, Tu. Th., 10:30 to 12:30. Experiments supplementary to 50a, which must precede or accompany it. Other prerequisites, 1a and 1b. Dockeray.

51.—PRINCIPLES OF PSYCHOLOGY. Three hours credit. Second semester, at 9:30. A consideration of the principles of psychology as a science, with special reference to method, classification, and terminology. Prerequisite, courses 1a, 10a, and 50a; these four systematic courses supplement each other and aim to cover the field of general psychology. Ogden.

60.—SOCIAL PSYCHOLOGY. Two hours credit. First semester, 9:30. The main general subjects of the course are: the social instincts and emotions; the psychology of social influence; and the interrelation of social with individual development. Must be preceded by course 1a. Ogden.

61.—ÆSTHETICS. Two hours credit. Second semester, at 9:30. The analysis of the beautiful and the sense of appreciation. Special consideration given to the principles of art involved in painting and music. This course should be preceded by course 1a, but is open without prerequisites to students in the School of Fine Arts. Ogden.

62.—ABNORMAL PSYCHOLOGY. Two hours credit. Second semester, at 9:30. A study of the subconscious in both the normal and the abnormal. Particular attention will also be given to hysteria and disintegrated personality. Dockeray.

63.—CHILD PSYCHOLOGY. Two hours credit. First semester, at 8:30. The mental development of the child in the preadolescent period. Particular attention will be given to the development of coördinations in the infant, the rise and function of instincts, and the functional significance of imagination and interest. Prerequisite, course 1a. Dockeray.

64.—ANIMAL PSYCHOLOGY. Three hours credit. First semester, at 8:30. This course aims to present the development of animal behavior through the animal series. The work consists of lectures, assigned readings, and experiments with animals. Students who show ability for advanced work will be given an opportunity for original investigations. Must be preceded by course 1a. Dockeray.

68.—ADVANCED PSYCHOLOGY I. Two to five hours credit. First semester, by appointment. This course provides for the advanced study of special subjects not otherwise covered in the current schedule of the department. Sensation, perception, habit, fatigue, emotion, the subconscious, the psychology of religion, mental tests, and animal behavior are illustrations of the field of available topics. The consent of the instructor must be obtained before enrolling in this course. Ogden, Dockeray.

69.—ADVANCED PSYCHOLOGY II. Two to five hours credit. Second semester, by appointment. A continuation of course 68, with the same prerequisites, but not necessarily preceded by it. Ogden, Dockeray.

70.—HISTORY OF PHILOSOPHY I. Three hours credit. First semester, at 10:30. The development of philosophy in its relations to general culture, scientific theory, education, politics, and religion, as well as in its more strictly metaphysical aspects. The work of the first term will ordinarily cover ancient philosophy from Thales to Plotinus, with special reference to Plato and Aristotle. This course has no prerequisites in the department, but is a natural sequel to the Sophomore courses. Hollands.

71.—HISTORY OF PHILOSOPHY II. Three hours credit. Second semester, at 10:30. A continuation of course 70, but not necessarily preceded by it; continuous election is advisable. Mediæval and modern philosophy, from St. Augustine to the present. Hollands.

72.—PHILOSOPHICAL CLASSICS I. Two hours credit. First semester, at 10:30. This course furnishes an opportunity for the study of some of the works important in the history of philosophy. The authors read vary with succeeding terms. Must be preceded or accompanied by course 70, which it is intended to supplement. Mitchell.

73.—PHILOSOPHICAL CLASSICS II. Two hours credit. Second semester, at 10:30. A continuation of course 72. Must be accompanied or preceded by course 71, which it supplements. Mitchell.

74.—THE THEORY OF KNOWLEDGE. Three hours credit. First semester, at 11:30. The subject of the course is the problem of truth, with special

reference to contemporary idealism, pragmatism, and realism. Prerequisites, courses 1a, 3, and 70, 71. Hollands.

75.—METAPHYSICS. Three hours credit. Second semester, at 11:30. Some typical tendencies and problems of contemporary thought will be examined and discussed in connection with the positive development of the subject. Prerequisites, courses 1a, 70, 71. Hollands.

76.—THE PHILOSOPHY OF RELIGION. Two hours credit. Second semester, at 10:30. After a preliminary examination of some of the theories concerning the origin and development of religion, in connection with the anthropological and psychological data, this course will study some of the problems common to religion and philosophy. Prerequisites, courses 1a, and either 4, 70, or 71. Hollands.

77.—ADVANCED LOGIC. Three hours credit. Second semester, at 1:30. A sequel to course 3, with attention to some of the philosophical aspects and problems of logic. Considerable outside reading is required. Prerequisite, course 3. Mitchell.

80.—SYSTEMATIC ETHICS. Three hours credit. First semester, at 11:30. This course undertakes a critical examination into the psychological sources of human conduct, a review of the historic ethical theories, and the development of a satisfactory ethical system. Prerequisites, courses 1a, and either 4, 70, or 71. (Given in alternate years with course 74. Not given in 1916-'17.) Hollands.

81.—PRACTICAL ETHICS. Two hours credit. Second semester, at 9:30. The application of theoretical principles of conduct to practical problems of life. Prerequisite, course 80. (Given in alternate years with course 75. Not given in 1916-'17.) Hollands.

PHYSICAL EDUCATION.

Professor NAISMITH.
Associate Professor GOETZ.
Mr. LORENZ, Instructor.
Miss PRATT, Instructor.
Miss ELLIOTT, Instructor.

For equipment reference is made to Section XII of the Catalog.

ADVICE AS TO CHOICE OF COURSES. The courses listed as exercises are designed primarily to secure health, recreation, and physical skill.

Course 20 is intended to teach the best methods of keeping the body at its highest efficiency, and of caring for it in emergencies.

Courses 50-58 are designed for the training of those who wish to become physical directors, coaches, managers, or any combination of these. Those looking forward to this work should take, in their Freshman and Sophomore years, at least one course in each of the following: anatomy, physiology, physics, chemistry, and psychology.

All Freshmen are required to take some form of exercise at least three times, and Sophomores twice, per week. An election from the listed courses is permitted according to the needs and wishes of the student.

A physical and medical examination is given to every student on entrance, and is used to determine the kind and amount of exercise best adapted for the individual. Abnormalities and conditions which affect the efficiency of the student will be pointed out; and, in so far as possible, he will be assisted in removing them.

Communications from parents or family physicians regarding the health of the student will be welcomed and will be of material assistance in directing his activities.

COURSES OF EXERCISE FOR MEN.

Exercises 1 and 2 are required of all Freshmen. Exercises 3 and 4 are required of all Sophomores. Exercises 5 to 10 are open, without credit, to College students, or may, by the direction of the instructor, constitute parts of the preceding exercises.

EXERCISE 1.** First semester, M. W. F., at 10:30, 11:30, 2:30, 3:30, 4:30. First half: recreative games and sports. Second half: calisthenics, apparatus, and swimming.

EXERCISE 2.** Second semester, M. W. F., at 10:30, 11:30, 2:30, 3:30, 4:30. First half: apparatus, swimming, and indoor games. Second half: outdoor games, track and field sports, and advanced swimming.

EXERCISE 3. First semester, Tu. Th., at 11:30, 2:30, 3:30. Advanced calisthenics and apparatus work, squad leading, exhibition gymnastics, and rescue swimming. Required of Sophomores.

EXERCISE 4. Second semester, Tu. Th., at 11:30, 2:30, 3:30. Defensive sports, aquatics, squad leading, and advanced gymnastics. Required of Sophomores.

EXERCISE 5. First half of first semester, daily, at 3:30. Freshman football.

EXERCISE 6. First half of first semester, daily, at 3:30. Varsity and class football, to which Sophomores are eligible.

EXERCISE 7. Second half of first semester, daily, at 7 p. m. Basket ball, Freshman and varsity, to which Sophomores are eligible.

EXERCISE 8. First semester, daily, at 3:30. Track, Freshman and varsity, to which Sophomores are eligible.

EXERCISE 9. Second semester, daily, at 3:30. Continuation of course 8.

EXERCISE 10. Second semester, daily, at 2:30. Baseball, Freshman and varsity, to which Sophomores are eligible.

COURSES OF EXERCISE FOR WOMEN.

Students will not be permitted to engage in strenuous exercises that are beyond their development or that are likely to injure them, but will be encouraged to take part in the games that are adapted to benefit them.

Students not strong enough to take the regular class work will be given work of such a nature as to meet their special needs.

A regulation gymnasium costume is required, which may be purchased after reaching the University. Gymnasium shoes with leather soles must be worn in the gymnasium, and may be purchased in Lawrence. The dressing rooms are provided with ventilated steel lockers, shower baths, and hair dryers. There is a woman attendant.

Advanced students may elect any of the forms of exercise in which they are particularly interested.

EXERCISE 1.** First semester, M. W. F., at 11:30, 2:30, 3:30. Calisthenics, wands, dumb-bells, pulley weights, esthetic exercises, folk dances, and gymnastic games.

EXERCISE 2.** Second semester, M. W. F., at 11:30, 2:30, 3:30. Continuation of course 1. Prerequisite, course 1, or its equivalent.

EXERCISE 3. First semester, Tu. Th., 11:30, 2:30, 3:30. Swedish gymnastics, folk dancing, esthetic and rhythmical exercises; Indian clubs. Prerequisite, course 2. Required of Sophomores.

EXERCISE 4. Second semester, Tu. Th., at 11:30, 2:30, 3:30. A continuation of course 3. Prerequisite, course 3. Required of Sophomores.

EXERCISE 5. First semester, daily, at 11:30. Advanced gymnastics, esthetic dancing, Swedish work, and games. Prerequisites, courses 1 to 4, or their equivalents.

EXERCISE 6. Second semester, daily, at 11:30. A continuation of course 5.

EXERCISE 7. Both semesters, daily, at 11:30 or 2:30. Corrective gymnastics, arranged for those students who need special forms of exercise for correction of bodily defects.

SWIMMING. The swimming pool is used by the women students on Monday and Tuesday from 1:30 to 5:30. All students are advised to learn to swim.

BASKETBALL. Regular practice is held Tu. Th., at 4:30, but organized teams may play at any time when the floor is unoccupied. Interclass games will be held at the regular hour.

TENNIS. There are five courts on South Field reserved for the women students and available whenever the weather permits.

FIELD HOCKEY. On Friday the classes in exercises 2 and 3 may substitute hockey for regular work. Class and other teams may be organized, and have regular hours for practice on South Field. Hockey sticks and balls are provided by the University.

Other games may be played whenever the field is unoccupied and when groups of students select a time.

ARCHERY. Bows and arrows are provided for beginners, and contests are held at the close of the season.

20.—**HYGIENE.**** Required of all Freshmen, men and women. Weekly lecture, first semester, at one of the following periods: Men: M., 4:30; Tu., 11:30; W., 1:30. Women: W., 10:30, 4:30; Th., 11:30, 4:30. Naismith and Goetz.

50.—**KINESIOLOGY.** Three hours credit. First semester, 8:30 to 10:30. A study of the human body as a mechanism; the muscles demanded and developed by exercise; muscles required in different forms of athletics; corrective exercises; massage. Prerequisite, elementary anatomy. Naismith.

51.—**PHYSIOLOGY OF EXERCISE.** Two hours credit. Second semester, 1:30. A study of the effects of exercise on the various systems of the body; effect of strain; feats of endurance; hygienic and recreative exercises; methods of development. Prerequisite, physiology 1. Goetz.

52.—**ANTHROPOMETRY.** Two hours credit. Second semester, 8:30. Physical, functional and medical examinations; tabulation and the use of the data of examination; the making of charts and diagrams and their use. Should be preceded by anatomy I and physiology I. Naismith and Goetz.

55.—**PRINCIPLES OF GYMNASTICS I.** Two hours credit. First semester, Tu. Th., 9:30. A study of the systems of physical education—German, Swedish, French, and English. The development of modern gymnastics and their application to schools and colleges; analysis of exercises and drills. Prerequisite, Freshman and Sophomore courses; should also be preceded by 50, 51, and 52. Goetz.

56.—**PRINCIPLES OF GYMNASTICS II.** Two hours credit. Second semester, M. W. F., 9:30. A continuation of course 55, and must be preceded by it. Goetz.

57.—**PRINCIPLES OF RECREATIVE SPORTS I.** Two hours credit. First semester, Tu. Th., 10:30. A study of festivals and games, ancient and modern; their place and value; their classification. Methods of conducting recreative games, sports, and play festivals; playground technic. Should be preceded by 50, 51, and 52. Pratt.

58.—**PRINCIPLES OF RECREATIVE SPORTS II.** Two hours credit. Second semester, Tu. Th., 10:30. A continuation of course 57, and should be preceded by it. Pratt.

59.—**PHYSICAL DEVELOPMENT OF THE CHILD.** Two hours credit. Second semester, 8:30. A study of the influence of heredity, nutrition, rest, exercise, training, curve of growth, effects of development on habits and character. Naismith.

PHYSICS AND ASTRONOMY.

Professor KESTER.
 Associate Professor RICE.
 Assistant Professor STIMPSON.
 Assistant Professor SMITH.
 Assistant Professor STAUFFER.
 Mr. WHITTEMORE, Instructor.

EQUIPMENT. The department occupies Blake Hall. The lecture rooms, laboratory and research rooms of the building are well supplied with water and gas and with various electrical circuits; the laboratory and research rooms are provided with piers free from vibration. A well-equipped shop and the services of an instrument maker are available for the construction of apparatus needed for special work. The equipment of apparatus for demonstration and regular laboratory work and for special investigation is good and is being increased constantly by well-chosen additions.

The physics library contains a fine collection of standard treatises, both elementary and advanced. American, English, German, French, and Italian journals of the science are at hand, with bound volumes for from twenty-five to forty years; the files of the more important journals have been extended back from seventy to ninety years. The published transactions and proceedings of a large number of the important physical societies of the world add notably to the value of the library for use in special fields of investigation.

The material equipment in astronomy consists of a six-inch telescope, made by Alvin Clark & Sons, on a portable equatorial tripod mounting; an equatorial clock-drive and a micrometer eye-piece have been purchased for this telescope; a two-inch terrestrial telescope on a portable altazimuth mounting; one two-inch and one three-inch transit instrument; a sextant; a spectroscope for attachment to the six-inch telescope; a fine comparator for photographic plate measurements; two chronometers, one a break-circuit instrument; a chronograph; a twenty-inch celestial globe; 600 astronomical slides; star charts, atlases, maps, drawings, etc. In addition, the equipment in physics is available for demonstrations and for laboratory work.

The astronomical library contains about 600 volumes, including some of the more important journals of the science.

ADVICE AS TO CHOICE OF COURSES. *Physics.*—The courses in physics are arranged to give, first, a general survey of the whole subject in the elementary and general courses (1, and 5 and 6); second, a more intensive study of the well-defined fundamental parts of the science in the courses 50 to 53 (with appropriate laboratory courses 55 to 57); and third, an opportunity to enter the more special fields in the courses 58 to 61. Courses 1 (elementary physics) and 5 and 6 (general physics), or their equivalents, are necessary for enrollment in any other course in physics. It is desirable that course 5 precede course 6. They are open to all students of the College. Courses 50 to 64 are open to Juniors and Seniors and to graduate students. Courses 50, 51, 52, and 53, with accompanying laboratory courses, should all be taken by students making physics their major, and courses 58, 60, and 61 may be added. Courses 58 and 60 do not presuppose the calculus. Students expecting to do advanced work in physics should obtain as early as practicable a working knowledge of the calculus. A reading knowledge of German and French is desirable for those who elect the advanced courses and is essential for graduates. Members of the department are glad to confer with students who intend to major in physics, and with those who intend to teach this science in high schools, as to the choice of courses best adapted to their needs.

Astronomy.—Students wishing only a general knowledge of the subject are advised to begin with astronomy 10 and 11, and to follow these, if possible, with courses 80 and 81. The courses 80 to 86 are designed for those who wish to make astronomy a major study. The courses following 81 should be preceded either by 80 and 81, or by 1, and should be taken in order, with the exception of 84, which may be taken at any time, subject to the necessary prerequisites.

PHYSICS.

1.—ELEMENTARY PHYSICS. Five hours credit. First semester, M. W. F., at 9:30; Tu. Th., 8:30 to 10:30. A first course in physics, intended to give a brief survey of the subject. Attention will be given, as far as possible, to problems in the household and everyday life. Recitations and laboratory, with some lectures and problems. Prerequisites, algebra and plane geometry. Not open for credit to students having credit in entrance physics. Laboratory fee, 50 cents. Stimpson.

5a.—GENERAL PHYSICS I. Mechanics, sound and light. Three hours credit. Second semester, at 2:30. Lectures, recitations and problems. Prerequisites, a first course in physics and some knowledge of plane trigonometry. Course 5a should be accompanied by 5b. Kester, Smith, Whittemore.

5b.—GENERAL PHYSICS LABORATORY I. Mechanics, sound and light. Two hours credit. Second semester, 1:30 to 3:30, or S., 8 to 12. Accompanied by or preceded by 5a. Fee, 75 cents. Smith, Whittemore.

6a.—GENERAL PHYSICS II. Heat and electricity. Three hours credit. First semester, at 2:30. A continuation of course 5, with the same prerequisites. It is desirable that physics 5 precede this course, though not necessary. Course 6a should be accompanied by 6b. Kester, Smith, Whittemore.

6b.—GENERAL PHYSICS LABORATORY II. Two hours credit. First semester, 1:30 to 3:30, or S., 8 to 12. Coördinate with 6a, with the same prerequisites. Course 6b must be accompanied by or preceded by 6a. Fee, 75 cents. Whittemore, Smith.

50.—MECHANICS AND HEAT. Three hours credit. First semester, at 9:30. Lectures and recitations. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Kester.

It is recommended that this course be followed by Mathematics 50, Analytical Mechanics, three hours.

51.—LIGHT AND RADIANT ENERGY. Three hours credit. Second semester, at 8:30. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Offered in alternate years. (Not offered in 1916-'17.) Smith.

52.—ELECTRICITY. Three hours credit. First semester, at 8:30. Lectures, recitations, and problems. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Rice.

53.—CONDUCTION OF ELECTRICITY THROUGH GASES, AND RADIOACTIVITY. Three hours credit. Second semester, at 9:30. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Offered in alternate years. Kester.

Courses 50, 51, 52, and 53 are designed to form a two-year cycle for theoretical treatment of the essentials of the subject matter of physics. The cycle is offered especially for Juniors and Seniors who are taking their major in physics. Either year of it is acceptable as a minor for graduate students who are working for the master's degree with their major in another department. An opportunity is offered in the laboratory courses 55 to 57 for experimental work which shall supplement to any desired extent the theoretical development of a given branch of the subject.

55.—PHYSICS LABORATORY. Light and radiant energy. Two to five hours credit. Second semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Fee, 75 cents to \$2. Smith.

56.—PHYSICS LABORATORY. Electricity. Two to five hours credit. Both semesters, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Fee, 75 cents to \$2. Rice.

57.—PHYSICS LABORATORY. Conduction of electricity through gases, and radioactivity. Two to five hours credit, second semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalent. Fee, 75 cents to \$2. Kester.

Courses 54, 55, 56, 57 are coördinate with 50, 51, 52, 53, with the same prerequisites, and supplement them from an experimental point of view.

58.—TEMPERATURE CONTROL AND MEASUREMENT. Three hours credit. Second semester, Tu., at 8:30; Th., 8:30 to 10:30; S., 8:30 to 11:30. This course will treat the subjects of the maintenance of constant temperatures, high and low; the various methods of measuring temperatures and of standardizing instruments, such as the platinum resistance thermometer, the thermo-electric couple, the pyrometer. Offered in alternate years. Fee, \$1. Kester.

60.—OPTICAL INSTRUMENTS. Three hours credit. Second semester, at 8:30. This course is coördinate with 51, treating the theory of light only in so far as it relates to applied optics. Offered in alternate years. Smith.

61.—ALTERNATING AND OSCILLATING CURRENTS. Three hours credit. Second semester, by appointment. Lectures, recitations, and problems. A continuation of course 52, dealing with the mathematical theory of alternating and oscillating currents and the propagation of varying electric currents in wires. Prerequisites, course 52 and some work in course 56, or equivalent, and a good working knowledge of calculus. Offered in alternate years. (Not offered in 1916-'17.) Rice.

63.—PHYSICS COLLOQUIUM I. One hour credit. First semester, by appointment. The members and the advanced students of the department meet once a week to report on researches published in the journals of the science and on the progress of original investigations carried on by members of the colloquium.

64.—PHYSICS COLLOQUIUM II. One hour credit. Second semester, by appointment. A continuation of course 63.

ASTRONOMY.

10.—DESCRIPTIVE ASTRONOMY. Three hours credit. Both semesters, at 9:30. An elementary course serving as an introduction to the subject. Stouffer.

11.—OBSERVATIONAL ASTRONOMY.* Two hours credit. First semester. Stress is laid on methods which may be carried on without the aid of large instruments, and which can be continued by the student independently. Prerequisite, trigonometry and astronomy 10. One evening and one afternoon a week.

80.—GENERAL ASTRONOMY I. Three hours credit. First semester, at 10:30. A comprehensive treatment of the subject, based on Young's General Astronomy, supplemented by reference to current astronomical literature. Prerequisites, elementary trigonometry and physics.

81.—GENERAL ASTRONOMY II. Three hours credit. Second semester, at 10:30. A continuation of 80.

82.—SPHERICAL AND PRACTICAL ASTRONOMY I. Two hours credit. One lecture and one laboratory period during the first semester, by appointment. Transformation of coördinates, time, sextant, transit, refraction. Prerequisites, descriptive astronomy, trigonometry, and calculus. Stouffer.

83.—SPHERICAL AND PRACTICAL ASTRONOMY II. Three hours credit. One lecture and one laboratory period during the second semester, by appointment. A continuation of 82.

84.—INTRODUCTION TO ASTROPHYSICS. Three hours credit. First semester, by appointment. A study of the principles, methods and instruments employed in investigating the physical conditions of celestial bodies. Prerequisites, astronomy 10, physics 5 and 6 or equivalent, and the calculus.

85.—THEORETICAL ASTRONOMY. Three hours credit. Second semester, by appointment. Methods of computing the orbits of planets and comets. Prerequisites, astronomy 10, and the calculus.

86.—PRACTICAL WORK IN COMPUTING. Two hours credit. To be taken in conjunction with 85.

PHYSIOLOGY.

Professor HYDE.
 Professor MATHEWS.
 Assistant Professor REES.
 Miss WALLING, Instructor.

EQUIPMENT. The physiology department is thoroughly equipped with modern apparatus for demonstration and experimental work. Besides a large lecture room it possesses a department library and a large laboratory that contains tables particularly designed for experimental work. The research room is fitted with necessary tables, instruments, and electrical apparatus for any kind of physiological experiments.

1.—**ELEMENTARY PHYSIOLOGY.** Five hours credit. Both semesters. Recitations, M. W. F., at 8:30, 10:30, or 1:30; laboratory, Tu. Th., 8:30 to 10:30, 10:30 to 12:30, or 1:30 to 3:30. A general elementary course in physiology, devoted to a study of the structure and functions of the human body, by means of lectures, demonstrations, recitations and laboratory experiments. Hyde, Walling, Rees.

2.—**ELEMENTARY HYGIENE.** Two hours credit. Both semesters, at 2:30. Lectures, conferences, and recitations. Open to those who have had an elementary course in physiology. Hyde.

3.—**GENERAL PHYSIOLOGY.** Five hours credit. Both semesters. Recitations, M. W. F., at 11:30; laboratory, Tu. Th., at 10:30 to 12:30. Lectures, demonstrations, recitations, and laboratory experiments. A continuation of physiology 1, designed for those who intend to teach or to specialize in the sciences. Prerequisites, elementary chemistry and elementary physiology. Hyde, Walling, and Rees.

60.—**ADVANCED PHYSIOLOGY I.** Five hours credit. Both semesters. Recitations, M. W. F., at 2:30; laboratory by appointment. Lectures, recitations, conferences, journal club, and laboratory experimental work, pertaining to the functions of the human body. Designed for those who intend to teach in higher institutions and wish to specialize in the subject. Prerequisites, chemistry, physics, biology, physiology 3 or its equivalent. Hyde.

61.—**ADVANCED PHYSIOLOGY II.** Five hours credit. Both semesters. A continuation of course 60. Hyde.

62.—**PROBLEMS IN PHYSIOLOGY I.** Five, three, or two hours credit. Both semesters, by appointment. Prerequisites, chemistry, physics, biology, and physiology 3 or its equivalent. Staff.

70.—**MEDICAL PHYSIOLOGY.** Five hours credit. First semester. Lectures and recitations, M. Tu. W. Th. and Sat., at 8:30 to 9:30. Laboratory, M. Tu., at 9:30 to 12:30. A general course, primarily for medical students, covering the physiology of the muscles; blood; circulation; respiration; glands of internal secretions; nervous system and metabolism. Open to College students who have preliminary training approved by the instructor. Mathews.

PUBLIC SPEAKING.

Professor MACMURRAY.
 Assistant Professor HILL.

EQUIPMENT. The special equipment of this department includes a collection of more than 200 books, to which carefully selected modern works dealing with debating and public addresses are added yearly. Through the courtesy of the Dean of the School of Law, rooms in Green Hall have been specially fitted for the work in public speaking, and the University chapel and other rooms are available for class recitations and individual practice. Moreover, the students in this department are urged to make constant use of books in the English, history, political science, economics, sociology, education, and other collections, as well as of the various current periodicals.

ADVICE AS TO CHOICE OF COURSES. The courses here offered are carefully articulated units, and are so arranged as to make possible a systematic study of public speaking. Students fitting themselves for the law or the ministry, for politics or social service, are urged to elect the entire series of

courses offered. The University of Kansas participates in debates with the Universities of Nebraska, Oklahoma, Colorado, and Missouri. For these contests the courses in public speaking are designed to give preparation. Men desiring to win places on intercollegiate debating teams are advised to take as much of the work as possible, but especially to take course 52. The course in the principles of argumentation formerly given by this department has been transferred to the department of English, and may now be taken as course 3 in rhetoric. While it is not made a prerequisite, it is strongly advised as a preparation to course 52 in debating. In fact, students who have not had the course in argumentation must be able to satisfy this department in some other way of their preparation for course 52 in debating.

To facilitate the work of the courses in dramatic art, a small but neat and practical stage has been fitted up in room 3, Green Hall. In addition to the regular class work the rehearsals for class and dramatic club plays are held in this room.

1.—ORAL INTERPRETATION I.* Two hours credit. Both semesters. First semester, two sections, Tu. Th., at 8:30; M. W., at 10:30. The purpose of this course is to enable the student to attain to some proficiency in the art of oral interpretation of literature. In connection with the practice work upon the platform, the student will be given such points of theory as are necessary in regard to the development and use of the voice and in regard to proper platform deportment. MacMurray, Hill.

2.—ORAL INTERPRETATION II.* Two hours credit. Both semesters. Tu. Th., at 9:30; M. W., at 8:30. This course will be a continuation of course 1, and will afford a more advanced study of the art of oral interpretation. Prerequisite, course 1. MacMurray.

50.—EXTEMPORE SPEAKING I. Two hours credit. Both semesters. First semester, three sections; Tu. Th., at 10:30, and M. W., at 11:30. Weekly addresses based on prepared outlines. Careful preparation of material is required; the plan of the speech is made in advance, but the choice of language is left for the moment of speaking. MacMurray or Hill.

51.—EXTEMPORE SPEAKING II. Two hours credit. Both semesters. Tu. Th., at 11:30; M. W., at 9:30. A continuation of extempore speaking I; same methods, but work is of more advanced nature. Lectures by head of department, and attention given to solution of special problems in public speaking. Prerequisite, course 50. MacMurray or Hill.

52.—DEBATING I. Two hours credit. First semester, two sections; M., 3:30 to 5:30; Tu., 3:30 to 5:30. Practical work in brief drawing and the handling of evidence, together with presentation in actual debate. The class is limited in number, and the course can be taken only with the consent of the instructor. It is recommended that course 3 in rhetoric be taken before or in connection with this course. Hill.

53.—DEBATING II. Two hours credit. Second semester, by appointment. This course is open only to members of the University Debating Squad, and consists in preparation for the University Intercollegiate Debates. Hill.

54.—ADVANCED PUBLIC SPEAKING. Two hours credit. Second semester, M. W., at 11:30. In addition to the regular class instruction, special instruction will be given in preparing lectures and recitals for the public platform. A carefully prepared production of some length will be required of each student by the end of the semester. Prerequisites, courses 1 and 2, or 50 and 51. MacMurray.

60.—DRAMATIC ART I. Two hours credit. First semester, by appointment. Training in the interpretation of the drama and instruction in stage technique. Standard and classic plays will be studied and presented, and each student will be assigned definite roles to interpret. Prerequisite, course 1 or its equivalent. MacMurray.

61.—DRAMATIC ART II. Two hours credit. Second semester, by appointment. A continuation of course 60. The work will be similar in character but of a more advanced nature. Prerequisite, course 60. MacMurray.

ROMANCE LANGUAGES AND LITERATURES.

Professor GALLOO.
 Associate Professor NEUENSCHWANDER.
 Associate Professor OWEN.
 Assistant Professor WARD.*
 Assistant Professor WINTER.
 Assistant Professor COWPER.
 Assistant Professor SKIDMORE.
 Miss GARDNER, Instructor.
 Miss STANTON, Instructor.
 Mr. APPELBOOM, Instructor.
 Mr. MELOM, Instructor.

EQUIPMENT. The department of Romance languages and literatures possesses a collection of illustrative material consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., illustrating the history, architecture, life, and general culture of the Romance nations.

The Romance library of the University contains 4642 volumes, which cover in a representative way the literary development of France, Spain, and Italy, from the earliest times to the present day, and the greater monuments of Portuguese literature. Thirty-four periodicals are received, which include all the important literary and philological journals devoted to the Romance languages.

ADVICE AS TO CHOICE OF COURSES. A major in Romance languages with emphasis on French includes, as prescribed courses, French 3, 4, 6, 10, two courses in French literature, one of which must be 54, and Spanish 71; as suggested courses within the department, Spanish 72, Italian, French courses in language or literature, according to the purpose of the student.

A major in Romance languages with emphasis on Spanish includes, as prescribed courses, Spanish 23, 24, 25, 74, 75, and French 51 and 52; as suggested courses within the department, further courses in Spanish, French or Italian.

All students whose major is in Romance languages are advised to elect courses in mediæval and modern European history, and in the history of English literature.

Those who intend to take up the study of the historical development of any of the Romance languages must be well grounded in Latin and have a reading knowledge of German, and if they purpose to teach, should take, in addition to the required work in education, the course in oral composition in the language in which they are specializing.

Graduate work in this department presupposes acquaintance with elementary Spanish and Italian.

FRENCH.

1.—**ELEMENTARY FRENCH.** Five hours credit. First semester, at 8:30, 9:30, 10:30, 11:30, and 1:30; second semester, at 9:30, 11:30, and 2:30. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation, accidence and elementary syntax. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 8:30.

2.—**FRENCH READING AND GRAMMAR.** Five hours credit. Second semester, at 8:30, 9:30, 10:30, 11:30, and 1:30; first semester, at 8:30, 10:30, and 2:30. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition.

3.—**MODERN FRENCH WRITERS.** Three hours credit. Both semesters, at 9:30 and 1:30. Translation and reading of works of Mérimée, George Sand, Victor Hugo, Anatole France, and René Bazin. Prerequisite, course 2.

4.—**FRENCH COMPOSITION.** Two hours credit. Both semesters, at 9:30 and 1:30. Written exercises for grammatical review; free composition; oral exercises; dictation. May be taken in conjunction with course 3 or course 6.

5.—**SCIENTIFIC FRENCH.** Three hours credit. First semester, by appointment. Open to students who are specializing in the sciences and who

*Absent on leave.

need an accurate and ready understanding of scientific French. Prerequisites, courses 1 and 2. Gardner.

6.—FRENCH PROSE AND POETRY. Three hours credit. Both semesters, at 10:30. Reading of representative works of the seventeenth, eighteenth and nineteenth centuries. Prerequisites, courses 3 and 4; may be taken in the same semester as course 4. NeuenSchwander, Ward, Stanton.

7.—FRENCH COMPOSITION. Two hours credit. Both semesters, by appointment. A continuation of course 4, intended to provide additional practice in writing and speaking French. Cowper, Stanton.

8.—CORNEILLE AND RACINE. Two hours credit. Both semesters, by appointment. Reading of four or five of the greatest tragedies of each poet. Must be preceded by 3 and 4, and should be by 6. Galloo, Stanton.

9.—ORAL FRENCH COMPOSITION. Three hours credit. Daily, second semester, at 2:30. This course is conducted entirely in French, and the idiomatic use of the spoken tongue is emphasized. Regular attendance at the meetings of the Cercle Français is expected of the students who elect this course. Must be preceded by 3 and 4, and preceded or accompanied by either 6 or 8, or their equivalents. Skidmore, Gardner, Stanton.

10.—MOLIERE. Three hours credit. First semester, at 11:30. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. Should be preceded by 6 or its equivalent. Galloo.

11.—FRENCH COMPOSITION, WRITTEN AND ORAL. Two hours credit. First semester, by appointment. Practice in writing and speaking French. Stanton.

12.—ADVANCED FRENCH COMPOSITION. Two hours credit. Second semester, by appointment. Translation, original composition, and practice in speaking French. Prerequisite, course 7 or 11. Galloo.

50.—THE FRENCH ELEMENT IN ENGLISH. Three hours credit. Second semester, by appointment. A study of the influence of French upon the vocabulary and syntax of the English language, with especial reference to Norman and post-Norman periods. The course will be conducted in English. NeuenSchwander.

51.—FRENCH I. Five hours credit. First semester, at 10:30. For Juniors and Seniors who are beginning French. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with French and wider reading than in the usual elementary courses for Freshmen and Sophomores. Galloo.

52.—FRENCH READING AND GRAMMAR. Five hours credit. Second semester, at 10:30. A continuation of course 51. Galloo.

53.—HISTORY OF EARLY FRENCH LITERATURE. Three hours credit. First semester, by appointment. From the earliest times to the classic period. Lectures, recitations, and private readings. Galloo.

54.—HISTORY OF MODERN FRENCH LITERATURE. Three hours credit. Second semester, by appointment. From the beginning of the classic period to the present day. Lectures, recitations, and private readings. Galloo.

55.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours credit. First semester, by appointment. A study of the development of French literature from Malherbe to the end of the reign of Louis XIV. Stanton.

56.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours credit. Second semester, by appointment. Special attention is paid to the life and works of Voltaire; study of Montesquieu, Rousseau and the encyclopedists; the dramatists. NeuenSchwander.

57.—THE ROMANTIC SCHOOL I. Three hours credit. First semester, by appointment. A study of the rise of romanticism in France and of its characteristic products in poetry and the drama. Lamartine, A. de Vigny, and A. de Musset. Galloo.

58.—THE ROMANTIC SCHOOL II. Two hours credit. Second semester, by appointment. A continuation of course 57, devoted chiefly to Victor Hugo's works. Galloo.

59.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours credit. First semester, by appointment. A survey of the novel in the seventeenth and eighteenth centuries. Galloo.

60.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours credit. Second semester, by appointment. The novel in the nineteenth century, with special reference to the origin and growth of realism and naturalism. Galloo.

61.—THE FRENCH DRAMA. Three hours credit. Second semester, by appointment. A study of the development of the drama in France from its origin to the close of the nineteenth century. Lectures, recitations, and written reports. Stanton.

62.—OLD FRENCH. Two hours credit. First semester, by appointment. An introduction to French philology. Reading of the *Extraits de la Chanson de Roland* (Gaston Paris), with special attention to the phonetic changes and the inflections. Galloo.

63.—OLD FRENCH. Two hours credit. Second semester, by appointment. A continuation of course 62. *Chrestomathie de l'ancien français* (Constans). Galloo.

SPANISH.

21.—ELEMENTARY SPANISH. Five hours credit. First semester, at 8:30, 9:30, 11:30, 1:30; second semester, at 8:30, 9:30, 10:30, and 1:30. An outline of grammar (Olmsted and Gordon). Reading of short stories. Elementary composition. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 1:30. Winter, Skidmore, Stanton, Melom.

22.—SPANISH READING AND GRAMMAR. Five hours credit. Second semester, at 8:30, 9:30, 11:30, 2:30; first semester, at 8:30, 10:30 and 2:30. Grammar and composition. Reading of easy modern prose: Carrión-Aza, Pérez, Galdós, Ibáñez, Caballero, etc., Winter, Skidmore, Stanton, Melom.

23.—MODERN SPANISH WRITERS. Three hours credit. Both semesters, at 10:30. Translation and reading of representative works of Alarcón, Becquer, Pereda, Valera, Palacio Valdés. Prerequisite, course 22. Winter, Skidmore.

24.—SPANISH COMPOSITION. Two hours credit. Both semesters, at 10:30. Systematic training in writing and speaking Spanish. Ramsey's *Textbook of Modern Spanish*; Umphrey's *Spanish Prose Composition*. Must be preceded or accompanied by course 23. Winter, Skidmore.

25.—SPANISH PROSE AND POETRY. Three hours credit. Both semesters, at 2:30. Specimens of the work of the poets and prose writers of the eighteenth and nineteenth centuries. Must be preceded or accompanied by course 24. Owen.

26.—ADVANCED SPANISH COMPOSITION. Two hours credit. First semester, at 2:30. Translation into Spanish of English prose; original composition, and practice in speaking Spanish. Must be preceded or accompanied by course 25. Owen.

27.—ORAL SPANISH COMPOSITION. Three hours credit. Daily, second semester, by appointment. This course is conducted wholly in Spanish, and the idiomatic use of the spoken tongue is emphasized. Regular attendance at the meetings of the Ateneo is expected of the students who elect this course. Prerequisites, courses 23, 24, and 25, save that students who have shown marked ability in courses 23 and 24 may omit 25. Skidmore, Melom.

71.—SPANISH I. Five hours credit. First semester, at 1:30. For Juniors and Seniors who are beginning Spanish. The aim of this course is to give some insight into the fundamental principles of language, together with a

more comprehensive acquaintance with Spanish and wider reading than in the usual elementary courses for Freshmen and Sophomores. Owen.

72.—SPANISH READING AND GRAMMAR. Five hours credit. Second semester, at 1:30. A continuation of course 71. Owen.

73.—DON QUIJOTE. Three hours credit. Second semester, by appointment. A careful reading of the first part, together with outside reading and reports covering the more famous chapters of the second part. Skidmore.

74.—HISTORY OF EARLY SPANISH LITERATURE. Three hours credit. First semester, at 3:30. From the earliest times, through the classic period. Lectures, recitations, and private readings. Owen.

75.—HISTORY OF MODERN SPANISH LITERATURE. Three hours credit. Second semester, at 3:30. From the classic period to the present day. Lectures, recitations, and private readings. Owen.

76.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours credit. First semester, by appointment. The *Novelas ejemplares* of Cervantes, *Lazarillo de Tormes*, and other picaresque novels. The Spain of the period. Lectures, collateral reading, and reports. Skidmore.

77.—THE CLASSIC SPANISH DRAMA. Two hours credit. Second semester, by appointment. Tirso de Molina, Lope de Vega, Calderón, and Ruiz de Alarcón. Careful study of selected plays from each dramatist; more rapid reading of others. Schack's Spanish Dramatic Literature. Owen.

ITALIAN.

Students are advised to take, as preparation, courses 1 and 2 or 51 and 52 in French.

31.—ELEMENTARY ITALIAN I. Three hours credit. First semester, by appointment. Grammar. Reading, Marinoni's Reader. Ward, Cowper.

32.—ELEMENTARY ITALIAN II. Continuation of course 31. Three hours credit. Second semester, by appointment. Grammar, composition, and reading of works of Manzoni, Edmondo de Amicis and other modern writers. Ward, Cowper.

33.—ITALIAN GRAMMAR AND READING. Two hours credit. First semester, at 1:30. Grammatical exercises accompanying the reading and translating of works of Goldoni, Fogazzaro, Carducci, Pascoli. Prerequisite, course 32. Ward.

34.—WRITERS OF THE CINQUECENTO. Two hours credit. Second semester, at 1:30. Reading of selections from Machiavelli, Cellini, Ariosto, Tasso, etc. D'Ancona and Bacci's *Manuale della letteratura Italiana*, vols. II and III. Prerequisite, course 33. Ward.

90.—DANTE. Three hours credit. First semester, by appointment. The *Divina Commedia*; its relation to the age, and its importance in the history of the Italian language and literature. Prerequisite, course 33. Cowper.

SOCIOLOGY.

Professor BLACKMAR.
Associate Professor HELLEBERG.
Mr. BODENHAFFER, Instructor.

EQUIPMENT. Instruction in the department of sociology is conducted chiefly by lectures, reading, recitation, and investigation, aided in the elementary courses by textbooks. The University library is well equipped for the study of sociology. All of the principal magazines treating of the work of this department are on file in the reading room for the use of the students. In addition there are charts, maps, and outlines. In the natural history museum is a valuable collection of specimens for the study of anthropology and ethnology. A limited amount of investigation of social and racial conditions is being carried on.

ADVICE AS TO COURSES. Elements of sociology as found in course 1 or 50 or its equivalent is a prerequisite to further work in the department. At the

beginning of the Junior year students desiring to major in sociology should consult with an instructor in the department in regard to choice of courses for the required major work.

The development of professional social work in this country opens up an attractive field for university men and women. The courses offered by this department are, therefore, of definite interest to those preparing to become workers in social settlements, secretaries of private charities, welfare secretaries in industries, staff sociologists in our state charitable and penal institutions, city superintendents of public welfare, recreation directors, and playground and social center workers. Experience has demonstrated that the study of sociology is a valuable preparation for teaching.

Suggested courses for training for social service (elements of sociology a prerequisite):

I. *Training for social service in urban communities.* 59, Ethnology; 61, Contemporary Society; 51, Applied Sociology; 52, Social Pathology; 53, Remedial and Corrective Agencies; Municipal Sociology; 55, Psychological Sociology; 107, Criminology (graduate). Students should elect additional courses in economics and political science.

II. *Training for social service in rural communities.* 60, Rural Sociology; 51, Applied Sociology; 56, The Family; 55, Psychological Sociology. Students should elect certain courses in economics and physical education.

III. *Training for social service in institutions.* 58, Anthropology; 52, Social Pathology; 53, Remedial and Corrective Agencies; 51, Applied Sociology; 107, Criminology (graduate); 103, Institutional and Social Service.

IV. *Training in preparation for the ministry, law, and medicine.* 58, Anthropology; 59, Ethnology; 56, The Family; 61, Contemporary Society; 54, Public Opinion; 55, Psychological Sociology; 57, Socialism.

V. *Training in preparation for teachers.* 61, Contemporary Society; 56, The Family; 52, Social Pathology; 53, Remedial and Corrective Agencies; 51, Applied Sociology; 55, Psychological Sociology; 54, Public Opinion.

1.—ELEMENTS OF SOCIOLOGY.* Three hours credit. Both semesters, at 8:30 and 1:30. A general course in the foundations and principles of sociology, including a study of the origin, evolution, structure, organization and activities of society. The course is especially arranged for those who have not previously studied sociology. Prerequisite to all courses except 50. Blackmar.

50.—ELEMENTS OF SOCIOLOGY. Two hours credit. Second semester, at 10:30. The same as course 1, except more difficult and greater emphasis on pure sociology and social theory. Either 50 or 1 prerequisite to other courses. Blackmar.

51.—PRINCIPLES OF APPLIED SOCIOLOGY. Three hours credit. Second semester, at 1:30. An application of the theories and principles studied in courses 1 and 50 to social activities. A special study of social energy and social waste, with methods of conservation of social energy and elimination of social waste. Blackmar.

52.—SOCIAL PATHOLOGY. Two hours credit. First semester, at 1:30. A general study of poverty, pauperism, unemployment, epilepsy, insanity, degeneracy, etc., and their causes, prevention, and cure. Conditions of the slums and rural population, housing of the poor, social maladjustment, occupational diseases, etc. Bodenhafer.

53.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours credit. Second semester, at 1:30. Administration of charitable and correctional affairs; management of jails, reformatories, penitentiaries, and institutions for defectives and dependents; housing of the poor. Each student is required to visit at least two social institutions and report on same. Bodenhafer.

54.—PUBLIC OPINION. Three hours credit. Second semester, at 2:30. A study of the origin and development of social control; public opinion and democracy; leadership and authority; phenomena of the public or ethnic mind; the relations of the individual and the group. Helleberg.

55.—**PSYCHOLOGICAL SOCIOLOGY.** Five hours credit. First semester, at 11:30. A study of the social self and the process of its development, together with applications to a variety of social problems, in order to establish a viewpoint and method for sociology and all the social sciences. Helleberg.

56.—**THE FAMILY.** Two hours credit. Second semester, at 2:30. The origin and growth of the family. The true family a biological, psychological and moral unity. Psychology of family life. Helleberg.

57.—**SOCIALISM.** Two hours credit. First semester, at 2:30. The development of modern socialistic theories, including a study of French and German socialism. The development of the socialistic movement. Helleberg.

58.—**GENERAL ANTHROPOLOGY.** Two hours credit. First semester, at 8:30. The natural history of man. The probable origin and antiquity of man. Comparison with anthropoid apes. Man's physical, social, and mental characteristics. Evidences of Tertiary man. The beginnings of art and industry. The origin and development of languages. Blackmar.

59.—**ETHNOLOGY.** Two hours credit. Second semester, at 8:30. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races. Blackmar.

60.—**RURAL SOCIOLOGY.** Two hours credit. Second semester, at 9:30. A study of social conditions in rural districts and small towns. The agencies for social and economic betterment. The church and the schoolhouse as social centers. Political, social, and economic organizations. Blackmar.

61.—**CONTEMPORARY SOCIETY IN THE UNITED STATES.** Three hours credit. First semester, at 2:30. A general survey of the natural environment, population and its distribution, industrial and social grouping, and is designed through the study of current concrete social problems as an introduction to sociology and as a means of correlating the various social sciences. Helleberg.

62.—**DEVELOPMENT OF SOCIAL THEORY.** Five hours credit. Second semester, at 11:30. A rapid historical survey of social philosophy from Plato to Comte, followed by a more detailed examination of current sociological theories. Primarily a graduate course, but open to Seniors by permission of the instructor. Helleberg.

63.—**SOCIAL SURVEYS.** Two hours credit. First semester, at 11:30. The history of the social survey. The social survey as a method of social investigation and of social statistics. This course is designed not only to present the literature of surveys, but to give the student the principles and practice of social surveys. Blackmar.

64.—**MUNICIPAL SOCIOLOGY.** Two hours credit. First semester, at 9:30. A study of the population, conditions of life, and social problems in the modern city with special reference to American municipalities. This course is a special study of city problems for students preparing for social work. Blackmar.

ZOOLOGY.

Professor ALLEN.
Associate Professor BAUMGARTNER.
Assistant Professor ROBERTSON.
Assistant Professor NOWLIN.
Assistant Professor DOUTHITT.
Mr. O'ROKE, Assistant Instructor.

The department is in possession of ample facilities in the way of apparatus and laboratory material. There are representative types of marine animals from the Pacific and the Atlantic coasts, as well as from Bermuda and Jamaica. Historical, cytological and embryological material of great variety has been provided. Microscopes, microtomes, and other apparatus necessary for even the most advanced work are at hand.

ADVICE CONCERNING CHOICE OF COURSES. Course 1 is designed as an introduction to the subject, and, so far as possible, gives a general survey of

the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. It is, therefore, a course which may be taken by those who wish merely to gain a general idea of zoölogy and also by those who wish to become acquainted with the methods of scientific work. As an elementary course it forms a basis for any advanced work, and is required for entrance into the other courses, except 51 and 52, 61, and 64.

Students contemplating the study of medicine are recommended to take not less than ten hours of work in zoölogy. Consultation should be had with the head of the department early in the course for the purpose of arranging the work.

MAJOR REQUIREMENTS. In the work counting toward a major, students must complete ten hours chosen from among the following courses: 53, 54, 55, 56, and 71.

1.—**ELEMENTARY ZOÖLOGY.** Five hours credit. First semester, laboratory, M. W. F., 8:30 to 10:30, 10:30 to 12:30, or 1:30 to 3:30; recitations and lectures, Tu. Th., 9:30, or 2:30. Second semester, laboratory, 8:30 to 10:30, or 10:30 to 12:30; recitations and lectures, 9:30 or 11:30. A study of biological principles as illustrated in the animal kingdom as a whole. The laboratory work is designed to give training in methods of scientific observation and interpretation. Fee, \$2.

2.—**INVERTEBRATE ZOÖLOGY.** Five hours credit. First semester, laboratory, M. W. F., 8:30 to 10:30; lectures and reports, Tu. Th., 8:30. An extensive study of invertebrates is undertaken with a view to giving the student a much wider acquaintance with the forms of animals and with general biological laws than is possible in a beginning course. Prerequisites, zoölogy 1 or equivalent. Fee, \$2. Nowlin.

3.—**COMPARATIVE ANATOMY.** Five hours credit. Second semester, 1:30 to 3:30 or 3:30 to 5:30. A course dealing with the structure and relations of the vertebrates. It consists of a laboratory study and dissection of types. Lectures and assigned readings. This course is designed for pre-medical students, those intending to teach and those wanting a general culture course. Prerequisite, course 1 or its equivalent. Fee, \$2.50. Baumgartner and Douthitt.

4.—**DEVELOPMENT AND HEREDITY.** Five hours credit. Second semester, laboratory, M. W. F., 10:30 to 12:30. Lectures, Tu. Th., at 10:30. A study of the general principles of embryonic development and their application to questions of heredity and eugenics. This course will incidentally involve training in microscopic technique. Prerequisite, course 1 or equivalent. Fee, \$2. Allen and Robertson.

50.—**SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY.** Five hours credit. First semester, by appointment. A classification of different groups of the fauna of this state. Prerequisites, courses 1 and 2 or 3. Fee, \$2.50. Douthitt.

51.—**ORNITHOLOGY.** Three hours credit. Second semester, Tu. Th., 8:30, and by appointment. Field trips by appointment. A study of the birds in this vicinity. A list of the different species will be made by the students, and special attention will be given to living birds, notes being taken as to date of appearance, nesting habits, song, etc. The collections in the museum will be used. Fee, \$1. Douthitt.

52.—**MAMMALS.** Two hours credit. Second semester, M. W., 8:30 to 10:30. This course will be along lines similar to 51, being a study of local fauna together with the preparations in the museum. Fee, \$1. Douthitt.

53.—**ANIMAL HISTOLOGY.** Five hours credit. First semester, 3:30 to 5:30. The methods of preparation and a careful study of normal tissues are given in this course. Lectures, assigned readings, and laboratory work. Prerequisites, courses 1 and 3, or equivalents. Fee, \$2.50. Baumgartner.

54.—**THE CELL.** Five hours credit. First semester, 10:30 to 12:30. General structure and functions of the cell in development and inheritance. Cell division; cell differentiation; the cell in growth and senescence; formation of germ cells; sex determination; fertilization, etc., with emphasis on

chromosomes and other elements concerned in heredity. The structure of protoplasm is followed by tissue culture methods. Cytological technique. Prerequisite, 10 hours of zoölogy or equivalent. Fee, \$2.50. Robertson.

55.—EMBRYOLOGY. Five hours credit. Second semester, 8:30 to 10:30. Lectures and laboratory. Especial attention will be given to the development of the birds and mammals. Two periods per week will be devoted to original studies. Prerequisite, ten hours of zoölogy or equivalent. Fee, \$2.50. Allen.

56.—PALEOZOÖLOGY. Five hours credit. Second semester, 10:30 to 12:30. A course dealing with the anatomical characters which have marked the evolutionary stages in the geological history of vertebrates. Lectures, recitations, assigned readings, and laboratory work. Abundant material is at hand for the full illustration of the course. Prerequisite, 10 hours of zoölogy. Geology 1 is recommended as further preparatory work. Fee, \$2.50. Douthitt.

57.—PARASITOLOGY. Three hours credit. First semester; lectures, M. W., at 1:30; laboratory, F., 1:30 to 3:30. Designed to meet the needs of those who study medicine or public health problems, and those interested in agriculture. The class will be divided upon this basis into two sections for the consideration of the more specialized phases of the work. Prerequisite, course 1 or equivalent. Fee, \$1. Allen.

60.—ANIMAL BIOLOGY. Three hours credit. First semester, at 8:30. This course is designed for those students who wish to study the general theories of animal biology beyond the point reached in the elementary course. Lectures and assigned readings. Prerequisite, zoölogy 1 or equivalent in other biological sciences. Allen and Douthitt.

61.—ANIMALS OF THE PAST. Two hours credit. First semester, at 8:30. A consideration of the various types of extinct animals, with a discussion of the general processes of evolution through which the present forms of animal life have passed. This will be illustrated by the collections in the museum. Prerequisite, zoölogy 1 or equivalent. Douthitt.

64.—HEREDITY IN RELATION TO EUGENICS. Two hours credit. Second semester; lectures, Tu. Th., at 8:30; laboratory, one hour by appointment, preferably, Tu. or Th., at 9:30. An exposition of the biological laws of eugenics with emphasis upon recent investigations in heredity. A course of special value to students of sociology, medicine, education, etc. Not open to those who have taken 4. Robertson.

71.—PROTOZOÖLOGY. Five hours credit. First semester, 1:30 to 3:30. A study of the unicellular animals with emphasis on the parasitic forms. The first part of the course is devoted to the acquirement of methods in technique. Laboratory, M. W. F., 1:30 to 3:30. Lectures and reports, Tu. Th., 2:30. Prerequisite, 10 hours of zoölogy or equivalent. Fee, \$2.50. Nowlin.

72a.—GENETICS. Three hours credit. Second semester, M. W. F., 1:30 to 3:30. Lectures, readings, and laboratory work adapted to the needs of the student. A careful study of variation and heredity; Mendelism; sex-linked inheritance; problems of evolution in the light of experimental breeding. Prerequisite, course 1 or equivalent. Course 4 or 64 is recommended. Robertson.

72b.—ANIMAL BREEDING. Two hours credit. Second semester. Lectures, Tu. and Th., at 1:30. Laboratory work, one hour a week, by appointment. A study of the races and breeds of domestic animals, their origin, the history of their association with man, and the principles of breeding used in their improvement. Should be taken in connection with botany 60 and entomology 60. Prerequisite, course 1 or equivalent. Robertson.

**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION IV
SCHOOL OF ENGINEERING**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Cherokee.

FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculties.

PERLEY F. WALKER, M. M. E., Dean of the School of Engineering, and Professor of Mechanical Engineering.

EDGAR HENRY SUMMERFIELD BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

CHARLES GRAHAM DUNLAP, Litt. D., Professor of English Literature.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

JAMES NAISMITH, M. D., Professor of Physical Education.

GEORGE CARL SHAAD, E. E., Professor of Electrical Engineering.

FREDERICK EDWARD KESTER, Ph. D., Professor of Physics.

HAMILTON PERKINS CADY, Ph. D., Professor of Chemistry.

B. J. DALTON,* B. C. E., Professor of Railway Engineering and Surveying.

HARRY ALVIN MILLIS, Ph. D., Professor of Economics.

HENRY WILBUR HUMBLE, A. M., Professor of Law.

HERBERT ALLEN RICE, C. E., Professor of Mechanics and Structural Engineering.

GOLDWIN GOLDSMITH, Ph. B., Professor of Architecture.

FRANK BURNETT DAINS, Ph. D., Professor of Chemistry.

CLEMENT C. WILLIAMS, C. E., Professor of Railway Engineering.

JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.

CHARLES HAMILTON ASHTON, Ph. D., Professor of Mathematics.

ARTHUR C. TERRILL, E. M., Professor of Mining and Ore Dressing.

MARTIN EVERETT RICE, M. S., Associate Professor of Physics.

GEORGE JUSSEN HOOD, B. S., Associate Professor of Mechanical Drawing.

WILLIAM ASBURY WHITAKER, A. M., Associate Professor of Metallurgy.

F. H. SIBLEY, M. E., Associate Professor of Mechanical Engineering.

CHARLES A. HASKINS, B. S., Associate Professor of Sanitary Engineering.

FREDERICK NEWTON RAYMOND, A. M., Associate Professor of Rhetoric.

HERMAN CAMP ALLEN, Ph. D., Associate Professor of Chemistry.

CLARENCE ANTHONY JOHNSON, B. S., Associate Professor of Electrical Engineering.

WILLIAM COLEMAN MCNOWN, B. S., Associate Professor of Civil Engineering.

ALFRED HIGGINS SLUSS, B. S. in M. E., Associate Professor of Mechanical Engineering.

EDWIN FISKE STIMPSON, B. S., Assistant Professor of Physics.

CHARLES COCHRAN, B. S. in M. E., Assistant Professor of Mechanical Drawing.

FRANK EVERETT JONES, Assistant Professor of Pattern Making and Founding.

CLIFFORD CAUDY YOUNG, M. S., Assistant Professor of Chemistry.

*On leave of absence.

HERBERT E. JORDAN, Ph. D., Assistant Professor of Mathematics.
 THEODORE TOWNSEND SMITH, A. M., Assistant Professor of Physics.
 F. W. BRUCKMILLER, A. B., Assistant Professor of Chemistry.
 PAUL VANCE FARAGHER, Ph. D., Assistant Professor of Chemistry.
 FRED REDDER HESSER,* B. S., Assistant Professor of Sanitary Engineering.
 JOHN DILLER GARVER, B. S., Assistant Professor of Mechanical Engineering.
 FRANK LOGAN BROWN, B. S., Assistant Professor of Mechanics.
 EDWARD MAURICE BRIGGS, A. M., Assistant Professor of German.
 CALVERT JOHNSON WINTER, Ph. B., Assistant Professor of Romance Languages.
 H. A. ROBERTS, B. S., Assistant Professor of Civil Engineering.
 JOSEPH E. WELKER, M. of C. E., Assistant Professor of Sanitary Engineering.
 E. B. STOFFER, Ph. D., Assistant Professor of Mathematics.
 J. O. JONES, M. S., Assistant Professor of Hydraulics.
 MAY GARDNER, A. B., Instructor in Romance Languages.
 JOHN JEFFERSON WHEELER, A. B., Instructor in Mathematics.
 HUBERT WILTFONG, Instructor in Forging.
 LEON B. MCCARTY, A. M., Instructor in Rhetoric.
 SARA G. LAIRD, A. B., Instructor in Rhetoric.
 SOLOMON LEFSCHETZ, Ph. D., Instructor in Mathematics.
 W. W. HAWKINS, A. M., Instructor in German.
 HERMAN ADOLPH LORENZ, Instructor in Physical Education.
 OSCAR ROCKLUND, Instructor in Foundry.
 H. O. LICHTENWALTER, B. S., Instructor in Chemistry.
 JOHN B. WHELAN, A. M., Instructor in Chemistry.
 IVAN P. PARKHURST, B. S., Instructor in Chemistry.
 CHARLES W. WHITE, Instructor in Machine Shop.
 ARTHUR W. LARSEN, A. M., Instructor in Mathematics.
 F. E. JOHNSON, E. E., Instructor in Electrical Engineering.
 LAURENS E. WHITTEMORE, A. M., Instructor in Physics.
 H. M. CURFMAN, B. S., Instructor in Electrical Engineering.
 RICHARD L. GRIDER, E. M., Instructor in Mining Engineering.
 KARL J. HOLZINGER, A. B., Instructor in Mathematics.
 WILLIS G. WHITTEN, Assistant Instructor in Architectural Engineering.

ADMINISTRATIVE COMMITTEE.

| | |
|---------------------------------|-----------------|
| P. F. WALKER, <i>Chairman.</i> | G. GOLDSMITH. |
| C. H. ASHTON, <i>Secretary.</i> | A. C. TERRILL. |
| G. C. SHAAD. | M. E. RICE. |
| H. A. RICE. | W. A. WHITAKER. |

G. J. HOOD, *Chief Adviser of Freshmen.*

*Resigned, March 1, 1916.

School of Engineering.

ORGANIZATION AND PURPOSE.

The School of Engineering was organized as a distinct school of the University in 1891. Prior to that time, for eighteen years, courses in engineering had been given under the collegiate department, mainly in the civil and electrical branches.

Technical work is given in eight departments, entirely within the control of the School. Departments of the College of Liberal Arts give courses in science, mathematics, language, and economics for engineering students. The curriculum includes definitely scheduled work leading to degrees in the main branches of engineering—civil, electrical, mechanical, mining, chemical, and architectural—with options under the civil in railway, structural, and sanitary engineering. Provision is made also for those who desire a training for business and administrative work based upon engineering.

The requirements for graduation emphasize the fact that a thorough grounding in the fundamental sciences, mathematics, and language is essential to successful engineering practice. This idea is then extended by introducing a moderate amount of specialized work in the Junior and Senior years, but the aim throughout is to develop the principles underlying technical engineering work rather than to make direct applications. It will be observed, moreover, that the requirements for graduation call for about twenty credit hours more than are required for a degree in pure science or arts, and this excess is in the nature of practice work in shop, field and drawing room. By these three methods the purpose of the School is shown, namely, to give the basis of a liberal education while providing for training in specialized professions, and to give sufficient practice work and familiarity with operating methods to enable the graduate to make himself useful to employers while he is gaining the broader experience necessary to a successful engineering career.

FIVE-YEAR COURSES.

In order to give greater emphasis to the value of general educational training for engineers, provision has been made for students so desiring to spend one year in the College of Arts and Sciences, and then to enter the School of Engineering for four years of study, making up a total of five years in the University. The conditions under which this may be done, and statements as to the degree conferred on completion of the work, are given in the following pages. The amount of technical work required is practically the same as in the regular four-year courses, but opportunities are offered for selecting a wider range of studies, and so providing for a broader education. Young men just graduating from high school are strongly urged to adopt this plan of procedure.

The leading characteristics of the several branches are noted in the following outlines:

Civil Engineering.

In the professional work emphasis is laid on surveying and field methods; on mechanics and the application to the designing of steel and concrete structures; on railway location and construction; on hydraulics, and the application to irrigation, canal and power work; and on water supply and other municipal problems, including pavement and highway construction. Particular emphasis is given to the training of men for the three important branches: namely, railway, structural, and sanitary engineering. For each of these a special schedule for the work of the Senior year will be found in the following pages.

Electrical Engineering.

The specialized studies under this heading follow the fundamental work in physics and machine elements. They give emphasis to the methods of design, construction and operation of electrical equipment of all kinds as employed for the production, distribution and application of electrical energy, and in telephone service. Much emphasis is laid on the fundamental principles of mechanics and electricity, and on laboratory practice in handling standard apparatus. Original investigation is encouraged in every way possible.

Mechanical Engineering.

In the professional work especial emphasis is placed on machine construction and design, the properties of materials, power generation with heat engines, and general manufacturing methods. Options in the Senior year permit specialization to a limited degree, so that the student may give his attention to that line in which he develops the greatest interest. The aim is to give the training which will permit the graduate to perform successfully the work required of the technical designer and administrator in manufacturing industries.

Mining Engineering.

In this branch professional work depends more directly upon chemistry and geology, and more work is required in these fundamentals than in the other branches already mentioned. Following this the professional work is of two kinds—first, that which bears upon the actual development and operation of mines, including the methods of administration; second, that which bears upon the treatment of the mine product in the various milling and smelting processes. It is the aim to emphasize the scientific principles involved, and so make it possible for the graduate to begin his later specialization successfully in any one of the many lines of work within the broad range of the mining industry.

Chemical Engineering.

In this branch opportunity is given for specialization in technical chemistry, with the aim to combine the ability to perform chemical work with training in the fundamentals of engineering. It is expected that students are fitting themselves for positions as chemists and superintendents of manufacturing plants where the work is based on chemical science. These include many industries, such as those involving iron and steel, smelting, refining, bleaching and dyeing processes, and the manufacture of many specialized products.

Architectural Engineering.

Much is included in this branch which involves the artistic as well as the utilitarian in building design and construction. It is recognized that architecture is essentially a fine art, but that this should be combined with the scientific and technical training which will enable the graduate to deal with the engineering side of construction work. The professional work given includes thorough instruction in the history and theory of architecture and in the principles of design. It is the aim to give such training as will enable the graduate to render efficient service while he is supplementing his school training by experience gained in office practice.

Engineering and Administrative Science.

Arrangements have been perfected whereby the College departments of economics, history, and sociology coöperate with the School of Engineering in offering work to fit men for positions in the administrative offices of manufacturing companies and in the transportation departments of railroads. Both the College student and the engineering student may profit by the plan.

The student who has started in engineering may begin to vary the regular schedule of studies during his second year, and may, under the advice of a

committee of the Faculty, arrange to substitute from twenty to twenty-five hours of courses in the College departments indicated in place of the more highly specialized engineering work. The student is trained, therefore, in all the fundamentals of engineering, and should be well fitted to take positions in offices where the work depends largely upon technical phases of the industry in question. A more detailed statement of the work will be found in the following pages under the heading "Curriculum."

DEGREES GRANTED.

All graduates of the School of Engineering are admitted to the degree of bachelor of science in engineering or bachelor of science. The first is given to those who have completed the work laid out on the regular four-year plan, based on entrance from the accredited high schools. The second is given to those who enter the School of Engineering after having completed thirty hours of work in the College of Arts and Sciences, and to those who complete the work offered in engineering and administrative science.

All graduates of the School of Engineering may enter the Graduate School of the University and become candidates for the degree of master of science under the regulations there in force.

Graduates in engineering from this school, and those who have received the master's degree for advanced study in engineering under the Graduate School, are eligible to the professional degrees of Civil Engineer, Electrical Engineer, Mechanical Engineer, Engineer of Mines, Chemical Engineer, and Architectural Engineer, whichever is appropriate to the undergraduate work taken. Candidates for these degrees must have spent at least three years of actual time in professional practice in positions of responsibility, in the design, construction, or operation of professional works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

The candidate must submit a thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of his own work or observation. If approved, the thesis, with all accompanying material, becomes the property of the University.

The thesis for any professional degree must be delivered to the Dean of the School of Engineering on or before May 15.

ADMISSION.

By act of the state legislature, all graduates of accredited high schools in Kansas are admitted to the Freshman class without examination.

Graduates of other preparatory schools will be admitted on such conditions as the Faculty may impose.

For the guidance of prospective students who desire to prepare themselves without graduating from accredited high schools an outline of preparatory studies which has been followed for many years is given below. A total of fifteen units must be offered for admission.

ENGLISH.—Rhetoric and English literature, 3 or 4 units. Three units required.

MATHEMATICS.—Elementary algebra, $1\frac{1}{2}$ units; plane geometry, 1 unit; solid geometry, $\frac{1}{2}$ unit; plane trigonometry, $\frac{1}{2}$ unit; advanced algebra, $\frac{1}{2}$ unit. Three units required to prepare for the regular engineering courses.

FOREIGN LANGUAGES.—Latin, 1, 2, 3 or 4 units; Greek, 1, 2, 3 or 4 units; German, 1, 2, 3 or 4 units; French, 1, 2, 3 or 4 units; Spanish, 1 or 2 units. Two units at entrance and ten hours of German, French or Spanish in the University complete the requirements for graduation.

PHYSICAL SCIENCES.—Physical geography, 1 or $\frac{1}{2}$ unit; physics, 1 unit; chemistry, 1 unit. One unit required.

BIOLOGICAL SCIENCES.—Botany, 1 unit; zoology, 1 unit; physiology, 1 or $\frac{1}{2}$ unit; biological science, 1 unit.

HISTORY AND SOCIAL SCIENCE.—Greek and Roman history, 1 unit; medieval and modern history, 1 unit; English history, 1 unit; American history, 1 unit; economics, 1 or $\frac{1}{2}$ unit; civics, $\frac{1}{2}$ unit. Three units recommended.

MANUAL TRAINING.—Woodwork, forging, and machine tool work, 2 units; free-hand or mechanical drawing, 1 unit.

MISCELLANEOUS.—Stenography, $\frac{1}{2}$ unit; bookkeeping, $\frac{1}{2}$ unit; commercial law, $\frac{1}{2}$ unit; commercial geography, $\frac{1}{2}$ unit; agriculture, $\frac{1}{2}$ or 1 unit; psychology, $\frac{1}{2}$ unit; advanced arithmetic if taken after one year of algebra, $\frac{1}{2}$ unit. Not more than two units are allowed.

Entrance Examinations.

Candidates for admission who are not graduates of accredited Kansas high schools may offer themselves for examinations in subjects usually embraced in the high-school curriculum. Whenever a candidate has thus secured credit for the equivalent of the work included in the curriculum of the accredited high school he will be admitted to the Freshman class.

A schedule of these examinations will be found on page 45 of the General Information Section of the Catalog.

Inadequate Preparation.

When a student by his current work shows insufficient preparation for any course, he may be required to make good such deficiency in any manner prescribed by his instructor and approved by the Dean of the School.

Admission to Advanced Standing.

The regulations governing admission to advanced standing are administered by a committee of the University Senate, which examines into the merits of each case presented to it, and either credits the applicant with a certain rank or recommends him to the head of departments for advanced credit or examination.

Application for such advanced standing must be made at the time of matriculation.

Undergraduates from other institutions must present certificates of honorable dismissal, or other satisfactory evidence of good character.

Admission to advanced standing may be secured in two ways:

BY EXAMINATION. A candidate may be admitted to the Sophomore, Junior or Senior class, if he appears on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the course, or such as are substantially equivalent thereto.

All applications for examination for advanced standing must be made during the opening week of the first term. Credit for work done in preparatory schools will be given upon examination only.

BY CERTIFICATE. Graduates or students from the higher classes of other engineering colleges may be admitted to advanced standing upon presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous course of study and of the evidence he presents of his proficiency in that course. Application for credits toward advanced standing in technical subjects should be made to the Dean of the School of Engineering.

Foreign Language Required for Graduation.

The total amount of work in foreign language which is required for graduation, both high-school credits and courses taken after entering the University being considered together, must be equivalent to twenty hours in University courses, of which at least ten hours shall be in one modern foreign language. Each unit of entrance credit counts as five hours.

The curriculum (see page 14) calls for ten hours of modern foreign language in the Freshman year. In any case where a student is able to satisfy the foreign language requirements by taking a lesser number of hours than ten, he may substitute other University work for the number of hours remaining.

Special Students.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special lines of work, without following any prescribed course of study or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose certificate of acceptance must

Any one regularly enrolled in another school of the University may be admitted as a special student to engineering classes, but all applications for such enrollment must be accompanied by the recommendation of the dean of the school concerned.

In all laboratory and shop courses the student is charged for the materials and supplies he consumes in his work. These charges are payable in advance at the office of the University Registrar by the purchase of a book of coupons receivable for materials in any course, or by the payment of a fixed amount

for a course in which the material can not be issued to each student individually. A schedule of these fixed fees, varying from 50 cents to \$4, is posted in Marvin Hall and in the office of the University Registrar. In those courses where a large amount of material is used by the student and paid for with coupons, the total cost for any one course may reach or occasionally exceed \$10.

Those students taking summer field work will be charged the actual cost of living and incidental expenses.

Cost of Drawing Instruments.

The ability to make standard office drawings in connection with the designing of machines and structures of all kinds is a necessary part of an engineer's attainments. The drawing practice begins in the Freshman year, and for all excepting chemical engineering students continues during the three years following. This fact makes necessary for each student the ownership of a set of drafting instruments of standard quality. In order to make this matter sure, and protect students from any who might wish to sell inferior grades, the School prescribes the kinds which may be used. During past years the lowest-priced complete set, in its case, has been one obtainable from Lawrence dealers for \$13.50. Dealers in other towns where there is little competition have usually sold equivalent sets at a price several dollars higher. Because of scarcity due to diminished importation of German-made instruments, the prices for the school year 1916-'17 will be greatly advanced, and students entering school that year should plan to expend from \$22 to \$25 for the regulation sets, together with other necessary equipment for the drawing classes.

Expense for Inspection Trips.

Students should make provision for expenses of about \$40 in the Junior or Senior year, or both, for inspection trips to engineering works. (See "Inspection Trips" at the end of "Description of Courses.")

ENGINEERING EXTENSION WORK.

CORRESPONDENCE COURSES.

Through the University Extension Division the School of Engineering offers work by correspondence. By this method it is possible for a student to secure instruction in many of the general courses required for the degree in engineering and in a few of the technical courses.

In cases where a group of six or more persons may be formed, arrangements have been made whereby the Extension Division will send an instructor at stated intervals to meet the class. By this means many of the technical courses are being offered which are not offered directly through correspondence. An additional fee is required for work thus given. In this manner it is possible for young men to do a large portion of the work required for a degree, but the School of Engineering requires that at least one year of work shall be done in residence.

Work is being offered also of a grade below that required for regular credit, in what are termed Vocational Courses. By means of these courses, effort is made to extend the facilities of the University to a large group of young men who have not had time or opportunity to fit themselves for regular engineering work. When possible the work is carried on in coöperation with the school authorities of cities and towns and with industrial organizations which employ boys in considerable numbers.

For further details, see "University Extension Division."

TECHNICAL SOCIETIES.

TAU BETA PI. Kansas Alpha Chapter of the honorary engineering society of Tau Beta Pi was installed in December, 1914. Members are from the Senior and Junior classes, chosen under regulations which require that all who are elected shall have standing in the upper fourth of their class. It is governed entirely by undergraduates.

Departmental Student Societies.

In each of the six departments in which a complete course of study leading to graduation is scheduled there is a well-organized society holding regular meetings at weekly or biweekly intervals. At these meetings technical addresses are given or topics from the current press discussed. The architectural, chemical, and civil engineering societies are local in their character. The electrical, mechanical, and mining organizations are connected with the respective national engineering societies. More detailed information is given on pages 42 and 43 of the General Information Section of the Catalog.

CURRICULUM

Leading to the Degree of Bachelor of Science in Engineering.

The work required for the degree of bachelor of science in the School of Engineering is in large measure prescribed. The following schedules show the variations among the several branches. Students are required to enroll for the work in the order given, excepting a few of the specialized courses in the Junior and Senior years, which do not depend directly on preceding courses.

The work of the Freshman year is very nearly the same for all students, so that a choice among the several branches need not be made at the start, except in the case of architectural engineering. A slight modification of the shop courses in machine construction makes it desirable for those planning to take civil and mining engineering to make definite decision at the end of the first semester.

COURSES COMMON TO ALL LINES.†

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.*

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-----------------------------------|--|----------------------|
| Mathematics 2..... | College Algebra..... | 3 |
| Mathematics 3..... | Plane Trigonometry..... | 2 |
| German, French or Spanish†..... | (Course as approved)..... | 5 |
| English 1 E..... | Rhetoric I..... | 3 |
| Engineering Drawing 1..... | Free-hand Drawing..... | 1 1/3 |
| Engineering Drawing 2..... | Mechanical Drawing..... | 2 2/3 |
| Engineering Drawing 4, or | Machine Drawing, or Foundry Practice and Pattern Making.... | 2 |
| Machine Construction 1 and 2..... | | |
| Engineering 1..... | Engineering Lectures..... | |
| Physical Education 1..... | Gymnasium, 3 periods per week. | |

SECOND SEMESTER, 17 hours credit.

| | | |
|-----------------------------------|---|---|
| Mathematics 4 E..... | Analytic Geometry..... | 5 |
| German, French, or Spanish†..... | (Course as approved)..... | 5 |
| English 2 E..... | Rhetoric II..... | 2 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Engineering Drawing 4, or | Machine Drawing, or Foundry, Forge and Machine Shop Prac- tice as assigned..... | 2 |
| Machine Construction 1 and 2, or | | |
| Machine Construction 3 and 4..... | Gymnasium, 3 periods per week. | |

CIVIL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------|---------------------------|----------------------|
| Civil Engineering 1..... | Elementary Surveying..... | 3 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| Physics 1 E..... | General Physics..... | 5 |
| Geology 1..... | Elementary Geology..... | 5 |
| | Technical Report I..... | 1 1/2 |

*THE HOUR OF CREDIT.—The amount of work required to complete a course is measured in "hours." One hour in the School of Engineering represents an amount of work which is estimated to require three hours per week, throughout a semester, of the time of a student of average ability. These three hours may be divided in any ratio between class attendance and outside work, most courses being in the ratio of one hour in class to two hours of outside preparation; or two hours in class to one hour of outside preparation or report writing; or all three required in class with no outside preparation. In the descriptions of courses the number of hours credit for each is stated.

†The foreign language chosen is carried regularly throughout the year, five hours each semester. The selection of the language courses will depend on the amount and kind of language offered at entrance. Students offering more than two units at entrance may be allowed to substitute other nontechnical courses for the foreign language, provided they complete ten hours in one modern language.

‡Excepting Architectural Engineering. For that see page 30.

COURSES OF STUDY.

15

SECOND SEMESTER, 16½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-------------------------------|--------------------------|----------------------|
| Civil Engineering 4..... | Railway Surveying..... | 2 |
| Civil Engineering 2..... | Higher Surveying..... | 3 |
| Mathematics 6 E..... | Calculus II..... | 3 |
| Physics 2 E..... | General Physics..... | 5 |
| Mechanical Engineering 5..... | Engines and Boilers..... | 3 |
| | Technical Report II..... | ½ |

SUMMER WORK.

| | |
|--------------------------|----------------------|
| Civil Engineering 3..... | Field Work, 4 weeks. |
|--------------------------|----------------------|

JUNIOR YEAR.

FIRST SEMESTER, 18 hours credit.

| | | |
|---------------------------|-----------------------------------|---|
| Civil Engineering 55..... | Railway Surveying..... | 4 |
| Civil Engineering 51..... | Cartography..... | 2 |
| Mechanics 50..... | Mechanics..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| English 59..... | Advanced Composition..... | 3 |

SECOND SEMESTER, 17½ hours credit.

| | | |
|---------------------------|----------------------------|---|
| Civil Engineering 57..... | Railway Location..... | 3 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Mechanics 53..... | Graphic Statics..... | 2 |
| Mechanics 55..... | Hydraulics..... | 3 |
| Mechanics 56..... | Hydraulic Laboratory..... | 1 |
| Chemistry 5 E..... | Engineering Chemistry..... | 3 |
| | Technical Report III..... | ½ |

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|---------------------------|------------------------------------|---|
| Civil Engineering 61..... | Stresses in Framed Structures..... | 5 |
| Civil Engineering 64..... | Masonry..... | 2 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Civil Engineering 70..... | Sanitary Engineering I..... | 3 |
| | Optional..... | 3 |
| | Thesis..... | 1 |
| | Technical Report IV..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|---------------------------|---------------------------------|---|
| Civil Engineering 62..... | Bridge Design..... | 4 |
| Civil Engineering 75..... | Roads and Pavements..... | 2 |
| Engineering 52..... | Industrial Administration..... | 3 |
| Mechanics 57..... | Cement Laboratory..... | 1 |
| Civil Engineering 66..... | Reinforced Concrete Design..... | 1 |
| | Optional..... | 4 |
| | Thesis..... | 2 |

One extended inspection trip is required during the Junior or Senior year.

Railway Engineering Option.

SENIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|--------------------------------|---|---|
| Civil Engineering 61..... | Stresses in Framed Structures..... | 5 |
| Civil Engineering 64..... | Masonry..... | 2 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Civil Engineering 70..... | Sanitary Engineering I..... | 3 |
| Civil Engineering 58..... | Railway Terminals and Signaling..... | 2 |
| Electrical Engineering 60..... | Elements of Electrical Engineering..... | 3 |
| | Technical Report IV..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|---------------------------|---|---|
| Civil Engineering 62..... | Bridge Design..... | 4 |
| Civil Engineering 75..... | Roads and Pavements..... | 2 |
| Mechanics 57..... | Cement Laboratory..... | 1 |
| Civil Engineering 59..... | Railway Construction and Maintenance..... | 3 |
| Engineering 52..... | Industrial Administration..... | 3 |
| Civil Engineering 66..... | Reinforced Concrete Design..... | 1 |
| | Thesis..... | 3 |

Structural Engineering Option.**SENIOR YEAR.****FIRST SEMESTER, 18½ hours credit.**

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|---|----------------------|
| Civil Engineering 61..... | Stresses in Framed Structures..... | 5 |
| Civil Engineering 64..... | Masonry..... | 2 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Civil Engineering 70..... | Sanitary Engineering I..... | 3 |
| Mechanics 54..... | Engineering Materials..... | 2 |
| Electrical Engineering 60..... | Elements of Electrical Engineering..... | 3 |
| | Technical Report IV..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|---------------------------|---------------------------------|---|
| Civil Engineering 62..... | Bridge Design..... | 4 |
| Civil Engineering 75..... | Roads and Pavements..... | 2 |
| Mechanics 57..... | Cement Laboratory..... | 1 |
| Civil Engineering 67..... | Higher Structures..... | 3 |
| Engineering 67..... | Industrial Administration..... | 3 |
| Civil Engineering 66..... | Reinforced Concrete Design..... | 1 |
| | Thesis..... | 3 |

Municipal and Sanitary Option.**JUNIOR YEAR.****FIRST SEMESTER, 17 hours credit.**

| | | |
|--------------------------------|-----------------------------------|---|
| Civil Engineering 73..... | Sanitary Science..... | 2 |
| Mechanics 50..... | Mechanics..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| English 59..... | Advanced Composition..... | 3 |
| Electrical Engineering 60..... | Electrical Engineering..... | 3 |

SECOND SEMESTER, 18½ hours credit.

| | | |
|---------------------------|---------------------------------|---|
| Civil Engineering 74..... | Waste and Garbage Disposal..... | 1 |
| Civil Engineering 75..... | Roads and Pavements..... | 2 |
| Civil Engineering 52..... | City Planning..... | 2 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Chemistry 3..... | Qualitative Analysis..... | 4 |
| Mechanics 55..... | Hydraulics..... | 3 |
| Mechanics 56..... | Hydraulic Laboratory..... | 1 |
| | Technical Report III..... | ½ |

SENIOR YEAR.**FIRST SEMESTER, 17½ hours credit.**

| | | |
|---------------------------|------------------------------------|---|
| Civil Engineering 61..... | Stresses in Framed Structures..... | 4 |
| Civil Engineering 64..... | Masonry..... | 2 |
| Civil Engineering 70..... | Sanitary Engineering I..... | 3 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Chemistry 56 E..... | Water Analysis..... | 5 |
| | Technical Report IV..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|---------------------------|---------------------------------|---|
| Engineering 52..... | Industrial Administration..... | 3 |
| Civil Engineering 72..... | Sanitary Design..... | 5 |
| Civil Engineering 71..... | Sanitary Engineering II..... | 4 |
| Mechanics 57..... | Cement Laboratory..... | 1 |
| Civil Engineering 66..... | Reinforced Concrete Design..... | 1 |
| | Thesis..... | 3 |

One extended inspection trip is required during the Junior or the Senior year.

ELECTRICAL ENGINEERING.**SOPHOMORE YEAR.****FIRST SEMESTER, 17½ hours credit.**

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-------------------------------|-----------------------------------|----------------------|
| Mathematics 5 E..... | Calculus I..... | 5 |
| Physics 1 E..... | General Physics..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| Mechanical Engineering 1..... | Machine Drafting..... | 1 |
| Machine Construction 3..... | Forging..... | 1 |
| Machine Construction 5..... | Bench Work..... | 1 |
| | Technical Report I..... | ½ |

COURSES OF STUDY.

17

SECOND SEMESTER, 18½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-------------------------------|--------------------------------|----------------------|
| Mechanical Engineering 3..... | Elementary Machine Design..... | 3 |
| Mechanical Engineering 4..... | Steam Machinery..... | 2 |
| Mathematics 6 E..... | Calculus II..... | 3 |
| Physics 2 E..... | General Physics..... | 5 |
| Chemistry 3..... | Qualitative Analysis..... | 4 |
| Machine Construction 6..... | Machine Tool Work I..... | 1 |
| | Technical Report II..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--------------------------------|--------------------------------|----|
| Electrical Engineering 50..... | Dynamo Machinery..... | 3 |
| Electrical Engineering 54..... | Electrical Laboratory..... | 1½ |
| Mechanics 50..... | Mechanics..... | 5 |
| Physics 52..... | Theory of Electricity..... | 3 |
| Physics 60 E..... | Electrical Measurements I..... | 1½ |
| Mechanical Engineering 52..... | Heat Engine Theory..... | 3 |
| | Technical Report III..... | ½ |

SECOND SEMESTER, 18 hours credit.

| | | |
|--------------------------------|-------------------------------------|----|
| Electrical Engineering 51..... | Theory of Alternating Currents..... | 5 |
| Electrical Engineering 55..... | Electrical Laboratory..... | 1½ |
| Mechanical Engineering 53..... | Mechanics of Heat Engines..... | 2 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| English 59..... | Advanced Composition..... | 3 |
| Physics 61 E..... | Electrical Measurements II..... | 1½ |

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--------------------------------|-------------------------------------|----|
| Electrical Engineering 52..... | Advanced Dynamo Machinery..... | 5 |
| Electrical Engineering 56..... | Advanced Electrical Laboratory..... | 1½ |
| Civil Engineering 50..... | Surveying..... | 3 |
| Mechanical Engineering 65..... | Power Laboratory..... | 1½ |
| Chemistry 64..... | Physical Chemistry I..... | 5 |
| | Thesis..... | 1 |
| | Technical Report IV..... | ½ |

SECOND SEMESTER, 16½ hours credit.

| | | |
|--------------------------------|----------------------------------|----|
| Electrical Engineering 58..... | Electric Power Transmission..... | 5 |
| Electrical Engineering 57..... | Illuminating Engineering..... | 2½ |
| Engineering 52..... | Industrial Administration..... | 3 |
| Electrical Engineering 61..... | Thesis..... | 3 |
| | Optional..... | 3 |

One extended inspection trip is required during the Junior or the Senior year.

MECHANICAL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|---------------------------------|--|----------------------|
| Mechanical Engineering 1..... | Machine Drafting..... | 1 |
| Mechanical Engineering 2..... | Mechanism..... | 3 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| Economics 1 E, or | } Elements of Economics, or (Advanced Language course as approved)..... | } 3 |
| German, French, or Spanish..... | | |
| Machine Construction 3..... | Forging..... | 1 |
| Machine Construction 5..... | Bench Work..... | 1 |
| | Technical Report I..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|-------------------------------|----------------------------|-----|
| Mechanical Engineering 6..... | Steam Engineering..... | 4 |
| Mathematics 6 E..... | Calculus II..... | 3 |
| Physics 1 E..... | General Physics..... | 5 |
| Chemistry 5 E..... | Engineering Chemistry..... | 3 |
| Machine Construction 6..... | Machine Tool Work I..... | } 2 |
| Machine Construction 7..... | Machine Tool Work II..... | |
| | Technical Report II..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 18 hours credit.

| | | |
|--------------------------------|-------------------------------------|---|
| Mechanical Engineering 51..... | Thermodynamics..... | 3 |
| Mechanical Engineering 64..... | Mechanical Laboratory..... | 1 |
| Physics 2 E..... | General Physics..... | 5 |
| Mechanics 50..... | Mechanics..... | 5 |
| Metallurgy 61 E..... | Metallurgy I..... | 3 |
| Machine Construction 8..... | Advanced Machine Shop Practice..... | 1 |

SECOND SEMESTER, 16 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|--------------------------------------|----------------------|
| Mechanical Engineering 50..... | Machine Design..... | 4 |
| Mechanical Engineering 54..... | Heating Ventilating and Cooking..... | 2 |
| Mechanical Engineering 60..... | Shop Methods..... | 1½ |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| English 59..... | Advanced Composition..... | 3 |
| | Technical Report..... | ½ |

SUMMER WORK.

| | |
|--------------------------------|-----------------------|
| Mechanical Engineering 68..... | Summer Vacation Work. |
|--------------------------------|-----------------------|

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

| | | |
|--------------------------------|--|----|
| Mechanical Engineering 56..... | Steam Engine and Turbine Design I..... | 3 |
| Mechanical Engineering 67..... | Thesis..... | 1 |
| Mechanics 55..... | Hydraulics..... | 3 |
| Mechanics 56..... | Hydraulic Laboratory..... | 1 |
| Engineering 51..... | Manufacturing..... | 2 |
| Electrical Engineering 50..... | Dynamo Machinery..... | 3 |
| Electrical Engineering 54..... | Electrical Laboratory..... | 1½ |
| Mechanical Engineering..... | Option (see below)..... | 3 |
| | Technical Report..... | ½ |

SECOND SEMESTER, 16 hours credit.

| | | |
|--------------------------------|--------------------------------|----|
| Mechanical Engineering 66..... | Heat Engine Laboratory..... | 1½ |
| Mechanical Engineering 67..... | Thesis (continued)..... | 2 |
| Civil Engineering 50..... | Surveying..... | 3 |
| Engineering 52..... | Industrial Administration..... | 3 |
| Electrical Engineering 53..... | Alternating Currents..... | 3 |
| Electrical Engineering 55..... | Electrical Laboratory..... | 1½ |
| Mechanical Engineering..... | Option (see below)..... | 3 |

Power Option.

FIRST SEMESTER.

| | | |
|--------------------------------|----------------------------------|-----|
| Mechanical Engineering 58..... | Internal Combustion Motors I, or | } 3 |
| Mechanics 58..... | Hydraulic Power..... | |

SECOND SEMESTER.

| | | |
|--------------------------------|--|-----|
| Mechanical Engineering 57..... | { Steam Engine and Turbine Design II, or | } 3 |
| Mechanical Engineering 59..... | | |

Manufactures Option.

FIRST SEMESTER.

| | | |
|--------------------------------|------------------------|-----|
| Mechanical Engineering 55..... | Refrigeration, or | } 3 |
| Mechanical Engineering 61..... | Structural Design..... | |

SECOND SEMESTER.

| | | |
|--------------------------------|--------------------------------|-----|
| Mechanical Engineering 58..... | Internal Combustion Motors, or | } 3 |
| Mechanical Engineering 62..... | Industrial Plant Design..... | |

One extended inspection trip is required during the Junior or the Senior year.

MINING ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit</i> |
|--------------------------|-----------------------------------|---------------------|
| Mathematics 5 E..... | Calculus..... | 5 |
| Geology 1..... | Elementary Geology..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 5 |
| Civil Engineering 1..... | Elementary Surveying..... | 3 |
| | Technical Report I..... | ½ |
| | Mining Journal..... | |

SECOND SEMESTER, 18½ hours credit.

| | | |
|---------------------------|----------------------------|---|
| Mining Engineering 1..... | Mining Methods..... | 1 |
| Physics 1 E..... | General Physics..... | 5 |
| Chemistry 3..... | Qualitative Analysis..... | 4 |
| Civil Engineering 2..... | Higher Surveying..... | 3 |
| Mineralogy 10..... | Elementary Mineralogy..... | 5 |
| | Technical Report II..... | ½ |
| | Mining Journal..... | |

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-------------------------------|----------------------------|----------------------|
| Mining Engineering 50..... | Mine Surveying..... | 1 |
| Mechanical Engineering 4..... | Steam Machinery..... | 2 |
| Chemistry 54..... | Quantitative Analysis..... | 5 |
| Mechanics 50..... | Mechanics..... | 5 |
| Physics 2 E..... | Physics..... | 5 |
| | Technical Report III..... | ½ |
| | Mining Journal..... | |

SECOND SEMESTER, 18 hours credit.

| | | |
|----------------------------|------------------------------------|---|
| Mining Engineering 51..... | (a) Excavation and Explosives..... | 2 |
| | (b) Practice Work..... | |
| Mining Engineering 52..... | Mining Law..... | 1 |
| Metallurgy 64 E..... | Iron and Steel..... | 2 |
| Metallurgy 57..... | Assaying..... | 5 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| English 59..... | Advanced Composition..... | 3 |
| | Mining Journal..... | |

Metal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 16½ hours credit.

| | | |
|--------------------------------|-----------------------------------|---|
| Mining Engineering 53..... | Ore Dressing I..... | 2 |
| Mining Engineering 54..... | Metal Mining..... | 2 |
| Mining Engineering 55..... | Mining Hydraulics..... | 2 |
| Mining Engineering 56..... | Mine Plant and Mill Design I..... | 2 |
| Geology 54..... | Economic Geology I..... | 3 |
| Electrical Engineering 60..... | Electrical Engineering..... | 3 |
| | Optional..... | 2 |
| | Technical Report IV..... | ½ |
| | Mining Journal..... | |

SECOND SEMESTER, 18 hours credit.

| | | |
|----------------------------|------------------------------------|---|
| Mining Engineering 57..... | Mine Administration..... | 1 |
| Mining Engineering 58..... | Ore Dressing II..... | 4 |
| Mining Engineering 59..... | Mine Examinations and Reports..... | 1 |
| Mining Engineering 60..... | Thesis..... | 2 |
| Geology 55..... | Economic Geology II..... | 5 |
| Metallurgy 62 E..... | Metallurgy..... | 3 |
| Engineering 52..... | Industrial Administration..... | 2 |
| | Mining Journal..... | |

Coal Mining Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--------------------------------|-----------------------------------|---|
| Mining Engineering 53..... | Ore Dressing..... | 2 |
| Mining Engineering 55..... | Mining Hydraulics..... | 2 |
| Mining Engineering 56..... | Mine Plant and Mill Design I..... | 2 |
| Mining Engineering 61..... | Coal Mining I..... | 2 |
| Geology 54..... | Economic Geology I..... | 3 |
| Electrical Engineering 60..... | Electrical Engineering..... | 3 |
| Geology 50..... | Historical Geology I..... | 3 |
| | Technical Report IV..... | ½ |
| | Mining Journal..... | |

SECOND SEMESTER, 17 hours credit.

| | | |
|----------------------------|------------------------------------|---|
| Mining Engineering 57..... | Mine Administration..... | 1 |
| Mining Engineering 59..... | Mine Examinations and Reports..... | 1 |
| Mining Engineering 60..... | Thesis..... | 2 |
| Mining Engineering 62..... | Coal Mining II..... | 3 |
| Geology 55..... | Economic Geology II..... | 5 |
| Engineering 52..... | Industrial Administration..... | 2 |
| | Optional..... | 3 |
| | Mining Journal..... | |

CHEMICAL ENGINEERING.

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-------------------------------|-----------------------------------|----------------------|
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 5 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| Physics 1 E..... | General Physics..... | 5 |
| Mechanical Engineering 1..... | Machine Drafting..... | 1 |
| Machine Construction 3..... | Forging..... | 1 |
| | Technical Report I..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|-----------------------------|------------------------------|---|
| Chemistry 3..... | Qualitative Analysis..... | 5 |
| Physics 2 E..... | General Physics..... | 5 |
| Mineralogy 10..... | Elementary Mineralogy I..... | 5 |
| Machine Construction 5..... | Bench Work..... | 2 |
| Machine Construction 6..... | Machine Tool Work I..... | |
| | Technical Report II..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|-------------------|------------------------------|---|
| Chemistry 4..... | Organic Chemistry I..... | 5 |
| Chemistry 54..... | Quantitative Analysis I..... | 5 |
| Mechanics 50..... | General Mechanics..... | 5 |
| English 59..... | Advanced Composition..... | 3 |
| | Technical Report III..... | ½ |

SECOND SEMESTER, 18 hours credit.

| | | |
|---------------------|--------------------------------------|---|
| Chemistry 51 A..... | Industrial Chemistry; Inorganic..... | 3 |
| Chemistry 55..... | Quantitative Analysis II..... | 5 |
| Chemistry 60..... | Organic Chemistry II..... | 5 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|----------------------|---|---|
| Chemistry 51 B..... | Industrial Chemistry; Organic..... | 3 |
| Chemistry 64..... | Physical Chemistry I..... | 5 |
| Metallurgy 61 E..... | Metallurgy I..... | 3 |
| Metallurgy 65 E..... | General Metallurgy..... | 2 |
| | { Optional from Chemistry Department, 4 hours | 4 |
| | or | |
| | { Optional 2 hours and Thesis 2 hours..... | |
| | Technical Report IV..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|---------------------|--------------------------------|---|
| Chemistry 65..... | Physical Chemistry II..... | 5 |
| Metallurgy 57..... | Assaying..... | 3 |
| Metallurgy 62..... | Metallurgy II..... | 3 |
| Engineering 52..... | Industrial Administration..... | 3 |
| | Thesis..... | 3 |

One extended inspection trip is required during the Senior year.

ARCHITECTURAL ENGINEERING.

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|----------------------------------|------------------------------------|----------------------|
| Architectural Engineering 1..... | Free-hand Drawing I..... | 2 |
| Mathematics 2..... | College Algebra..... | 3 |
| Mathematics 3..... | Plane Trigonometry..... | 2 |
| German, French or Spanish*..... | (Course as approved)..... | 5 |
| English 1 E..... | Rhetoric I..... | 3 |
| Engineering Drawing 1 and 2..... | Mechanical Drawing..... | 2 |
| Engineering 1..... | Engineering Lectures..... | |
| Physical Education 1..... | Gymnasium, 3 periods per week..... | |

*French preferred.

COURSES OF STUDY.

21

SECOND SEMESTER, 17 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|----------------------------------|--|----------------------|
| Architectural Engineering 2..... | Free-hand Drawing II..... | 2 |
| Mathematics 4 E..... | Analytic Geometry and Theory of Equations..... | 5 |
| German, French or Spanish..... | (Course as approved)..... | 5 |
| English 2 E..... | Rhetoric II..... | 2 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Physical Education 2..... | Gymnasium, 3 periods per week. | |

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|----------------------------------|--------------------------------|---|
| Architectural Engineering 3..... | Architectural Design I..... | 3 |
| Architectural Engineering 5..... | History of Architecture I..... | 3 |
| Architectural Engineering 7..... | Architectural Drawing I..... | 1 |
| Architectural Engineering 9..... | Shades and Shadows..... | 1 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| Physics 1 E..... | General Physics..... | 5 |
| | Technical Report I..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|----------------------------------|---------------------------------|---|
| Architectural Engineering 4..... | Architectural Design II..... | 3 |
| Architectural Engineering 6..... | History of Architecture II..... | 3 |
| Architectural Engineering 8..... | Architectural Drawing II..... | 1 |
| Physics 2 E..... | General Physics..... | 5 |
| Mathematics 6 E..... | Calculus II..... | 3 |
| Mechanical Engineering 4..... | Steam Machinery..... | 2 |
| | Technical Report II..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|-----------------------------------|-----------------------------------|---|
| Architectural Engineering 50..... | Architectural Design III..... | 3 |
| Architectural Engineering 56..... | History of Architecture III..... | 2 |
| Architectural Engineering 58..... | Building Construction I..... | 3 |
| Architectural Engineering 62..... | Architectural Drawing III..... | 1 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| Mechanics 50..... | Mechanics..... | 5 |
| | Technical Report III..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|-----------------------------------|-------------------------------|---|
| Architectural Engineering 51..... | Architectural Design IV..... | 3 |
| Architectural Engineering 59..... | Building Construction II..... | 3 |
| Architectural Engineering 61..... | Building Sanitation..... | 1 |
| Architectural Engineering 63..... | Architectural Drawing IV..... | 1 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Mechanics 53..... | Graphic Statics..... | 2 |
| Mechanical Engineering 54..... | Heating and Ventilation..... | 2 |
| | Technical Report IV..... | ½ |

SENIOR YEAR.

FIRST SEMESTER, 19 hours credit.

| | | |
|-----------------------------------|--|---|
| Architectural Engineering 52..... | Architectural Design V..... | 2 |
| Civil Engineering 61..... | Stresses in Framed Structures..... | 5 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Economics 1 E..... | Elements of Economics..... | 3 |
| English 59..... | Advanced Composition..... | 3 |
| Electrical Engineering 64..... | Electrical Engineering for Architects..... | 3 |

SECOND SEMESTER, 15 hours credit.

| | | |
|-----------------------------------|--------------------------------|---|
| Architectural Engineering 53..... | Architectural Design VI..... | 2 |
| Architectural Engineering 57..... | Thesis..... | 3 |
| Architectural Engineering 65..... | Steel Construction..... | 3 |
| Mechanics 57..... | Hydraulic Cement..... | 1 |
| Engineering 52..... | Industrial Administration..... | 3 |
| Civil Engineering 50..... | Surveying..... | 3 |

One extended inspection trip is required during the Junior or the Senior year.

ENGINEERING AND ADMINISTRATIVE SCIENCE.

SOPHOMORE YEAR.

FIRST SEMESTER.

- (a) TRANSPORTATION GROUP. Same as in Civil Engineering.
- (b) MANUFACTURING GROUP. Same as in Mechanical, Electrical, Mining, or Chemical Engineering.

SECOND SEMESTER.

- (a) TRANSPORTATION GROUP. Civil Engineering schedule, modified by introduction of Elements of Economics.
- (b) MANUFACTURING GROUP. Mechanical Engineering schedule, modified for those who have not taken Economics 1 E.

JUNIOR AND SENIOR YEARS.

- (a) TRANSPORTATION GROUP. To follow Civil Engineering schedule, with Economics 6 E, Economic History of the United States; 3 E, Elements of Accounting, and other approved courses substituted for engineering courses.
- (b) MANUFACTURING GROUP. To follow Mechanical Engineering schedule, with the same substitutions of courses in Economics as those indicated above.

The total of courses in Economics, History, and Sociology to be taken by students in Engineering and Administrative Science must amount to not less than 20 and not more than 26 hours.

CURRICULUM

Leading to the Degree of Bachelor of Science.

REQUIREMENTS FOR ADMISSION.

To be admitted to these courses of study the student must have completed all of the requirements for admission and thirty hours of work in the College. His work should have been selected so that at the close of the year in the College he will have completed, in entrance work and in College work combined, the following specified units (a unit is understood to mean one complete College entrance unit or five hours credit in the University):

- 4 units in Mathematics.
- 4 units in English.
- 4 units in Foreign Language.
- 1 unit in Physics or Chemistry.

If his work has not been selected to fulfill these requirements, the student will be required to make up all deficiencies.

WORK REQUIRED FOR GRADUATION.

The various courses of study outlined below are designed to give approximately the same amount of technical work as is given in the regular four-year period, but the preceding year spent in College work enables the student to obtain a wider general education and to have a little greater freedom in the selection of some of his scientific and engineering studies.

In the selection of his work in foreign language, the student is required to complete not less than five units of foreign language, of which at least two and three-fifths units must be in one modern language.

CIVIL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 16 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|-----------------------------------|----------------------|
| Mathematics 4 E..... | Analytic Geometry..... | 5 |
| German, French or Spanish..... | (Course as approved)..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| Engineering Drawing 1..... | } Free-hand Drawing..... | 2 |
| Engineering Drawing 2..... | | |
| | Mechanical Drawing..... | |

SECOND SEMESTER, 17 hours credit.

| | | |
|--------------------------------|---------------------------|---|
| Mathematics 5 E..... | Calculus I..... | 5 |
| German, French or Spanish..... | (Course as approved)..... | 3 |
| Chemistry 3..... | Qualitative Analysis..... | 4 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Engineering Drawing 4..... | Machine Drawing..... | 2 |

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|-----------------------------|--|---|
| Civil Engineering 1..... | Surveying..... | 3 |
| Mathematics 6 E..... | Calculus II..... | 3 |
| Physics 1 E..... | General Physics..... | 5 |
| Geology 1..... | Elementary Geology..... | 5 |
| Machine Construction 3..... | } Forging and Machine Shop Practice..... | 2 |
| Machine Construction 4..... | | |
| | Technical Report I†..... | ½ |

SECOND SEMESTER, 18 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|---------------------------------------|----------------------------|----------------------|
| Civil Engineering 1 (continued) | Surveying | 3 |
| Civil Engineering 4 | Railway Surveying | 2 |
| English 59 | Advanced Composition | 3 |
| Physics 2 E | General Physics | 5 |
| Mechanical Engineering 5 | Engines and Boilers | 3 |
| | Optional | 2 |

SUMMER WORK.

Civil Engineering 3

Summer Field Work, 4 weeks.

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|----------------------------|-----------------------------|---|
| Civil Engineering 51 | Cartography | 2 |
| Civil Engineering 55 | Railway Surveying | 4 |
| Mechanics 50 | Mechanics | 5 |
| Economics 1 E | Elements of Economics | 3 |
| | Optional | 3 |
| | Technical Report II† | ½ |

SECOND SEMESTER, 18½ hours credit.

| | | |
|----------------------------|-----------------------------|---|
| Mechanics 53 | Graphic Statics | 3 |
| Civil Engineering 57 | Railway Location | 3 |
| Mechanics 51 | Strength of Materials | 4 |
| Mechanics 52 | Testing Laboratory | 1 |
| Mechanics 56 | Hydraulic Laboratory | 1 |
| Mechanics 55 | Hydraulics | 3 |
| | Optional | 3 |
| | Technical Report III† | ½ |

SUMMER WORK.

Civil Engineering 51

Summer Field Work, 4 weeks.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|---------------------------------|--|---|
| Civil Engineering 64 | Masonry | 2 |
| Civil Engineering 65 | Reinforced Concrete | 3 |
| Civil Engineering 61 | Stresses in Framed Structures | 5 |
| Civil Engineering 70, or | Sanitary Engineering I | 3 |
| Electrical Engineering 60 | Elements of Electrical Engineering | 3 |
| | Thesis† | 1 |
| | Technical Report IV† | ½ |

SECOND SEMESTER, 16 hours credit.

| | | |
|----------------------------|----------------------------------|---|
| Civil Engineering 62 | Bridge Design | 4 |
| Engineering 52 | Industrial Administration | 3 |
| Mechanics 57 | Hydraulic Cement | 1 |
| Civil Engineering 75 | Roads and Pavements | 2 |
| Civil Engineering 66 | Reinforced Concrete Design | 1 |
| | Optional | 3 |
| | Thesis† | 2 |

One extended inspection trip is required during the Junior or the Senior year.

For Railway and Structural Engineering options, see page 15.

Municipal and Sanitary Option.

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|---------------------------------|--|---|
| Mechanics 50 | Mechanics | 5 |
| Civil Engineering 73 | Sanitary Science | 2 |
| Electrical Engineering 60 | Elements of Electrical Engineering | 3 |
| Chemistry 56 E | Water Analysis | 5 |
| Economics 1 E | Elements of Economics | 3 |
| | Technical Report II† | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|----------------------------|----------------------------------|---|
| Civil Engineering 75 | Roads and Pavements | 2 |
| Civil Engineering 52 | City Planning | 2 |
| Mechanics 55 | Hydraulics | 3 |
| Mechanics 56 | Hydraulic Laboratory | 1 |
| Civil Engineering 74 | Waste and Garbage Disposal | 1 |
| Mechanics 51 | Strength of Materials | 4 |
| Mechanics 52 | Testing Laboratory | 1 |
| | Optional | 3 |
| | Technical Report III† | ½ |

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|---------------------------|------------------------------------|----------------------|
| Civil Engineering 64..... | Masonry..... | 2 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Civil Engineering 61..... | Stresses in Framed Structures..... | 4 |
| Civil Engineering 70..... | Sanitary Engineering I..... | 3 |
| | Thesis†..... | 1 |
| | Optional..... | 4 |
| | Technical Report IV†..... | ½ |

SECOND SEMESTER, 16 hours credit.

| | | |
|---------------------------|---------------------------------|---|
| Engineering 52..... | Industrial Administration..... | 3 |
| Civil Engineering 72..... | Sanitary Design..... | 5 |
| Civil Engineering 71..... | Sanitary Engineering II..... | 4 |
| Mechanics 57..... | Cement Laboratory..... | 1 |
| Civil Engineering 66..... | Reinforced Concrete Design..... | 1 |
| | Thesis†..... | 2 |

One extended inspection trip is required during the Junior or the Senior year.

ELECTRICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 18 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|-----------------------------------|----------------------|
| Mathematics 4 E..... | Analytic Geometry..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| German, French or Spanish..... | (Course as approved)..... | 5 |
| Engineering Drawing 1 and | } Free-hand Drawing..... | 2 |
| Engineering Drawing 2..... | | |
| Machine Construction 1 and | } Mechanical Drawing..... | 2 |
| Machine Construction 2..... | | |
| | Foundry Practice..... | 2 |
| | Pattern Making..... | 2 |

SECOND SEMESTER, 17 hours credit.

| | | |
|--------------------------------|---------------------------|---|
| Mathematics 5 E..... | Calculus I..... | 5 |
| Chemistry 3..... | Qualitative Analysis..... | 4 |
| German, French or Spanish..... | (Course as approved)..... | 3 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Engineering Drawing 4..... | Machine Drawing..... | 2 |

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|-------------------------------|----------------------------|---|
| Physics 1 E..... | General Physics..... | 5 |
| Mathematics 6 E..... | Calculus II..... | 3 |
| Chemistry 64..... | Physical Chemistry I..... | 5 |
| Economics 1 E..... | Elements of Economics..... | 3 |
| Mechanical Engineering 1..... | Machine Drafting..... | 1 |
| Machine Construction 3..... | Forging..... | 1 |
| | Technical Report I†..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|-------------------------------|--------------------------------|---|
| Mathematics..... | (Course to be elected)..... | 3 |
| Physics 2 E..... | General Physics..... | 5 |
| Mechanical Engineering 3..... | Elementary Machine Design..... | 3 |
| Mechanical Engineering 4..... | Steam Machinery..... | 2 |
| Civil Engineering 50..... | Surveying..... | 3 |
| Machine Construction 5..... | Bench Work..... | 1 |
| | Technical Report II†..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--------------------------------|--------------------------------|----|
| Electrical Engineering 50..... | Dynamo Machinery..... | 3 |
| Electrical Engineering 54..... | Electrical Laboratory..... | 1½ |
| Mechanics 50..... | Mechanics..... | 5 |
| Physics 52..... | Theory of Electricity..... | 3 |
| Physics 60 E..... | Electrical Measurements I..... | 1½ |
| Mechanical Engineering 52..... | Heat Engine Theory..... | 3 |
| | Technical Report III†..... | ½ |

SECOND SEMESTER, 18 hours credit.

| | | |
|--------------------------------|-------------------------------------|----|
| Electrical Engineering 51..... | Theory of Alternating Currents..... | 5 |
| Electrical Engineering 55..... | Electrical Laboratory..... | 1½ |
| Mechanical Engineering 53..... | Mechanics of the Steam Engine..... | 2 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| English 59..... | Advanced Composition..... | 3 |
| Physics 61 E..... | Electrical Measurements II..... | 1½ |

SENIOR YEAR.

FIRST SEMESTER, 16 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|-------------------------------------|----------------------|
| Electrical Engineering 52..... | Advanced Dynamo Machinery..... | 5 |
| Electrical Engineering 56..... | Advanced Electrical Laboratory..... | 1½ |
| Mechanical Engineering 65..... | Power Laboratory..... | 2 |
| | Thesis†..... | 1 |
| | Optional..... | 6 |
| | Technical Report IV†..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|--------------------------------|----------------------------------|---|
| Electrical Engineering 57..... | Illuminating Engineering..... | 3 |
| Electrical Engineering 58..... | Electric Power Transmission..... | 5 |
| Engineering 52..... | Industrial Administration..... | 3 |
| | Optional..... | 3 |
| | Thesis†..... | 3 |

One extended inspection trip is required during the Junior or the Senior year.

MECHANICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|-----------------------------------|----------------------|
| Mathematics 4 E..... | Analytic Geometry..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 5 |
| German, French or Spanish..... | (Course as approved)..... | 5 |
| Engineering Drawing 1..... | Free-hand Drawing..... | 1½ |
| Engineering Drawing 2..... | Mechanical Drawing..... | 2½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|-----------------------------|-------------------------|--------|
| Mathematics 5 E..... | Calculus I..... | 5 |
| Chemistry 3 or 5 E..... | (Optional)..... | 5 or 3 |
| | (College Optional)..... | 3 or 5 |
| Engineering Drawing 4..... | Machine Drawing..... | 2 |
| Machine Construction 1 and | Foundry Practice..... | 2 |
| Machine Construction 2..... | Pattern Making..... | 2 |

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|-------------------------------|---------------------------|---|
| Mathematics 6 E..... | Calculus II..... | 3 |
| Physics 1 E..... | General Physics..... | 5 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Machine Construction 3 and | (Forging.....) | 3 |
| Machine Construction 5 and | Bench Work..... | |
| Machine Construction 6..... | Machine Tool Work I..... | 3 |
| Mechanical Engineering 2..... | Mechanism..... | 3 |
| | Technical Report I†..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|-------------------------------|---------------------------|---|
| Physics 2 E..... | General Physics..... | 5 |
| Mechanical Engineering 6..... | Steam Engineering..... | 4 |
| Mechanics 50..... | Mechanics..... | 5 |
| | Optional..... | 3 |
| | Technical Report II†..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--------------------------------|----------------------------|---|
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Mechanical Engineering 51..... | Thermodynamics..... | 1 |
| Mechanical Engineering 64..... | Mechanical Laboratory..... | 4 |
| Metallurgy 61 E..... | Metallurgy I..... | 3 |
| Economics 1 E..... | Elements of Economics..... | 3 |
| Machine Construction 7..... | Machine Tool Work II..... | 1 |
| | Technical Report III†..... | ½ |

SECOND SEMESTER, 17 hours credit.

| | | |
|--------------------------------|--|---|
| Mechanical Engineering 50..... | Machine Design..... | 4 |
| Mechanical Engineering 54..... | Heating, Ventilating, and Cooling..... | 2 |
| Mechanical Engineering 60..... | Shop Methods..... | 2 |
| English 59..... | Advanced Composition..... | 3 |
| Mechanical Engineering 66..... | Heat Engine Laboratory..... | 2 |
| Machine Construction 8..... | Machine Shop Practice..... | 1 |
| | Optional..... | 3 |

COURSES OF STUDY.

27

SUMMER WORK.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|--------------------------------|-----------------------|----------------------|
| Mechanical Engineering 68..... | Summer Vacation Work. | |

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

| | | |
|--|--|-----|
| Mechanical Engineering 56..... | Steam Engine and Turbine Design I..... | 3 |
| Mechanical Engineering 67..... | Thesis..... | 1 |
| Mechanics 55..... | Hydraulics..... | 3 |
| Mechanics 56..... | Hydraulic Laboratory..... | 1 |
| Engineering 51..... | Manufacturing..... | 2 |
| Electrical Engineering 50..... | Dynamo Machinery..... | 3 |
| Electrical Engineering 54..... | Electrical Laboratory..... | 1½ |
| Mechanical Engineering Option (see below)..... | Technical Report..... | 3 ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|--|--------------------------------|----|
| Mechanical Engineering 67..... | Thesis..... | 2 |
| Civil Engineering 50..... | Surveying..... | 3 |
| Engineering 52..... | Industrial Administration..... | 3 |
| Electrical Engineering 53..... | Alternating Currents..... | 3 |
| Electrical Engineering 55..... | Electrical Laboratory..... | 1½ |
| Mechanical Engineering Option (see below)..... | | 5 |

Power Option.

FIRST SEMESTER.

| | | |
|--------------------------------|----------------------------------|-----|
| Mechanical Engineering 58..... | Internal Combustion Motors I, or | } 3 |
| Mechanics 58..... | Hydraulic Power..... | |

SECOND SEMESTER.

| | | |
|--------------------------------|---|-----|
| Mechanical Engineering 57..... | Steam Engine and Turbine Design II, or | } 5 |
| Mechanical Engineering 59..... | Internal Combustion Motors II, and Other Engineering Option..... | |

Manufactures Option.

FIRST SEMESTER.

| | | |
|--------------------------------|------------------------|-----|
| Mechanical Engineering 55..... | Refrigeration, or | } 3 |
| Mechanical Engineering 61..... | Structural Design..... | |

SECOND SEMESTER.

| | | |
|--------------------------------|---|-----|
| Mechanical Engineering 58..... | Internal Combustion Motors, or | } 5 |
| Mechanical Engineering 62..... | Industrial Plant Design, and Other Engineering Option..... | |

One extended inspection trip is required during the Junior or the Senior year.

MINING ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-----------------------------|--|----------------------|
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 5 |
| Mathematics 4 E..... | Analytical Geometry and Theory of Equations..... | 5 |
| Engineering Drawing I..... | Free-hand Drawing..... | 1 ⅓ |
| Engineering Drawing II..... | Mechanical Drawing..... | 2 ⅔ |
| Machine Construction 3..... | Forging..... | 1 |
| Machine Construction 5..... | Bench Work..... | 1 |
| Engineering 1..... | Engineering Lectures..... | |
| | Optional..... | 3 |

SECOND SEMESTER, 17 hours credit.

| | | |
|-----------------------------|---------------------------|---|
| Mining Engineering 1..... | Mining Methods..... | 1 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| Chemistry 3..... | Qualitative Analysis..... | 5 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Engineering Drawing 4..... | Machine Drafting..... | 2 |
| Machine Construction 6..... | Machine Tool Work I..... | 1 |

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-------------------------------|---------------------------|----------------------|
| Geology I..... | Elementary Geology..... | 5 |
| Civil Engineering 1..... | Elementary Surveying..... | 3 |
| Physics 1 E..... | General Physics..... | 5 |
| Mechanical Engineering 4..... | Steam Machinery..... | 2 |
| Mechanical Engineering 1..... | Machine Drafting..... | 1 |
| | Optional..... | 2 |
| | Technical Report..... | 1½ |
| | Mining Journal..... | |

SECOND SEMESTER, 18 hours credit.

| | | |
|----------------------------|------------------------------------|---|
| Mining Engineering 51..... | (a) Excavation and Explosives..... | 2 |
| | (b) Practice Work..... | 3 |
| Mineralogy 10..... | Elementary Mineralogy..... | 5 |
| Civil Engineering 2..... | Higher Surveying..... | 3 |
| Physics 2 E..... | General Physics..... | 5 |
| English 59..... | Advanced Composition..... | 3 |

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|----------------------------|----------------------------|----|
| Mining Engineering 50..... | Mine Surveying..... | 1 |
| Geology 50..... | Historical Geology..... | 3 |
| Chemistry 54..... | Quantitative Analysis..... | 5 |
| Mechanics 50..... | Mechanics..... | 5 |
| Geology 54..... | Economic Geology I..... | 3 |
| | Technical Report II..... | 1½ |
| | Mining Journal..... | |

SECOND SEMESTER, 18½ hours credit.

| | | |
|----------------------------|----------------------------|----|
| Mining Engineering 52..... | Mining Law..... | 1 |
| Metallurgy 64 E..... | Iron and Steel..... | 2 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Metallurgy 57..... | Assaying..... | 5 |
| Geology 54..... | Economic Geology II..... | 5 |
| | Technical Report III..... | 1½ |
| | Mining Journal..... | |

Metal Option.

SENIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--------------------------------|--|----|
| Mining Engineering 53..... | Ore Dressing I..... | 2 |
| Mining Engineering 54..... | Metal Mining..... | 2 |
| Mining Engineering 56..... | Mine Plant and Mill Design I..... | 2 |
| Mining Engineering 55..... | Mining Hydraulics..... | 2 |
| Mining Engineering 68..... | Mineral and Public Land Surveying..... | 2 |
| Mining Engineering 64..... | Mining Engineering..... | 2 |
| Electrical Engineering 60..... | Electrical Engineering..... | 3 |
| | Technical Report IV..... | 1½ |
| | Optional..... | 2 |
| | Mining Journal..... | |

SECOND SEMESTER, 16, 17 or 18 hours credit.

| | | |
|----------------------------|---------------------------------------|---|
| Mining Engineering 57..... | Mine Administration..... | 1 |
| Mining Engineering 58..... | Ore Dressing 2..... | 4 |
| Mining Engineering 59..... | Mine Examination and Reports..... | 1 |
| Mining Engineering 63, or | Mine Plant and Mill Designing II..... | 3 |
| Mining Engineering 67, or | Advanced Ore Dressing III..... | 4 |
| Mineralogy 61..... | Petrography..... | 5 |
| Metallurgy 62 E..... | Metallurgy..... | 3 |
| Engineering 52..... | Industrial Administration..... | 2 |
| Mining Engineering 60..... | Thesis..... | 2 |

Coal Mining Option. (5-year Course.)

SENIOR YEAR.

FIRST SEMESTER, 18 hours credit.

| | | |
|----------------------------|--|---|
| Mining Engineering 53..... | Ore Dressing..... | 2 |
| Mining Engineering 61..... | Coal Mining I..... | 2 |
| Mining Engineering 56..... | Mill Plant and Mill Design I..... | 2 |
| Mining Engineering 55..... | Mining Hydraulics..... | 2 |
| Mining Engineering 68..... | Mineral and Public Land Surveying..... | 2 |
| Mining Engineering 64..... | Mining Engineering..... | 2 |
| | Optional..... | 3 |
| | Mining Journal..... | |

SECOND SEMESTER, 17 to 18 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|----------------------------|------------------------------------|----------------------|
| Mining Engineering 57..... | Mine Administration..... | 1 |
| Mining Engineering 62..... | Coal Mining II..... | 3 |
| Mining Engineering 59..... | Mine Examination and Reports..... | 1 |
| Mining Engineering 63, or | Mine Plant and Mill Design II..... | 3 |
| Mining Engineering 67, or | Advanced Ore Dressing III..... | 4 |
| Mining Engineering 66..... | Mining Economy..... | 2 |
| Mining Engineering 52..... | Industrial Administration..... | 2 |
| Mining Engineering 60..... | Thesis..... | 2 |
| | Optional..... | 3 |

CHEMICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

NOTE.—Students planning to take the four-year advanced course of study in chemical engineering are very strongly advised to elect chemistry 1 as part of their College work, in addition to the work already recommended in the statement preceding these advanced courses.

FRESHMAN YEAR.

FIRST SEMESTER, 17 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|----------------------------|--|----------------------|
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 5 |
| Mathematics 4 E..... | Analytic Geometry and Theory of Equations..... | 5 |
| Engineering Drawing 1..... | } Free-hand Drawing..... | 2 |
| Engineering Drawing 2..... | | |
| | Optional..... | 5 |

SECOND SEMESTER, 17 hours credit.

| | | |
|-----------------------------|---------------------------|---|
| Chemistry 3..... | Qualitative Analysis..... | 5 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |
| Engineering Drawing 4..... | Machine Drawing..... | 2 |
| Machine Construction 1..... | } Foundry Practice..... | 2 |
| Machine Construction 2..... | | |
| | Pattern Making..... | |

SOPHOMORE YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|--|------------------------------|---|
| Chemistry 54..... | Quantitative Analysis I..... | 5 |
| Physics 1 E..... | General Physics..... | 5 |
| Mechanics 50..... | Mechanics..... | 5 |
| Machine Construction 3 (modified)..... | Forging..... | 1 |
| Mechanical Engineering 1..... | Machine Drafting..... | 1 |
| | Technical Report I†..... | ½ |

SECOND SEMESTER, 18½ hours credit.

| | | |
|-------------------------------|-------------------------------|---|
| Chemistry 55..... | Quantitative Analysis II..... | 5 |
| Physics 2 E..... | General Physics..... | 5 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Mechanical Engineering 3, or | } Machine Design..... | 3 |
| Mechanical Engineering 5..... | | |
| | Engines and Boilers..... | |
| | Technical Report II†..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|----------------------|----------------------------|---|
| Chemistry 4..... | Organic Chemistry I..... | 5 |
| Metallurgy 61 E..... | Metallurgy I..... | 3 |
| Geology 1..... | Elementary Geology..... | 5 |
| English 59..... | Advanced Composition..... | 3 |
| Metallurgy 65 E..... | General Metallurgy..... | 2 |
| | Technical Report III†..... | ½ |

SECOND SEMESTER, 18½ hours credit.

| | | |
|----------------------|-------------------------------------|---|
| Chemistry 60..... | Organic Chemistry II..... | 5 |
| Chemistry 51 A..... | Inorganic Industrial Chemistry..... | 3 |
| Metallurgy 62 E..... | Metallurgy II..... | 3 |
| Mineralogy 10..... | Elementary Mineralogy I..... | 5 |
| | Optional..... | 2 |
| | Technical Report IV†..... | ½ |

SENIOR YEAR.

FIRST SEMESTER, 17 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-----------------------|-----------------------------------|----------------------|
| Chemistry 51 B..... | Industrial Organic Chemistry..... | 3 |
| Chemistry 64..... | Physical Chemistry I..... | 5 |
| Chemistry..... | (Optional)..... | 4 |
| Economics 1 E..... | Elements of Economics..... | 3 |
| | Thesis†..... | 2 |

SECOND SEMESTER, 16 credit hours.

| | | |
|---------------------|--------------------------------|---|
| Chemistry 65..... | Physical Chemistry II..... | 5 |
| Metallurgy 57..... | Assaying..... | 3 |
| Engineering 52..... | Industrial Administration..... | 3 |
| | Optional..... | 2 |
| | Thesis†..... | 3 |

One extended inspection trip is required during the Senior year.

ARCHITECTURAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

FIRST SEMESTER, 18 hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|----------------------------------|--|----------------------|
| Architectural Engineering 1..... | Free-hand Drawing I..... | 2 |
| Mathematics 4 E..... | Analytic Geometry and Theory of Equations..... | 5 |
| German, French, or Spanish*..... | (Course as approved)..... | 5 |
| Chemistry 2..... | Advanced Inorganic Chemistry..... | 4 |
| Engineering Drawing 1 and 2..... | Mechanical Drawing..... | 2 |

SECOND SEMESTER, 17 hours credit.

| | | |
|----------------------------------|--|---|
| Architectural Engineering 2..... | Free-hand Drawing II..... | 2 |
| Mathematics 5 E..... | Calculus I..... | 5 |
| German, French, or Spanish..... | (Course as approved, or Optional)..... | 3 |
| Chemistry 3..... | Qualitative Analysis, or Optional..... | 4 |
| Engineering Drawing 3..... | Descriptive Geometry..... | 3 |

SOPHOMORE YEAR.

FIRST SEMESTER, 18½ hours credit.

| | | |
|----------------------------------|--------------------------------|---|
| Architectural Engineering 3..... | Architectural Design I..... | 3 |
| Architectural Engineering 5..... | History of Architecture I..... | 3 |
| Architectural Engineering 7..... | Architectural Drawing I..... | 1 |
| Architectural Engineering 9..... | Shades and Shadows..... | 1 |
| Physics 1 E..... | General Physics..... | 5 |
| Mathematics 5 E..... | Calculus II..... | 3 |
| Machine Construction 1, and | } Forging and Bench Work..... | 2 |
| Machine Construction 2..... | | |
| | Woodworking and Molding..... | |
| | Technical Report I†..... | ½ |

SECOND SEMESTER, 17½ hours credit.

| | | |
|----------------------------------|---------------------------------|---|
| Architectural Engineering 4..... | Architectural Design II..... | 3 |
| Architectural Engineering 6..... | History of Architecture II..... | 3 |
| Architectural Engineering 8..... | Architectural Drawing II..... | 1 |
| Physics 2 E..... | General Physics..... | 5 |
| Mechanical Engineering 4..... | Steam Machinery..... | 2 |
| | Optional..... | 3 |
| | Technical Report II†..... | ½ |

JUNIOR YEAR.

FIRST SEMESTER, 17½ hours credit.

| | | |
|-----------------------------------|----------------------------------|---|
| Architectural Engineering 50..... | Architectural Design III..... | 3 |
| Architectural Engineering 56..... | History of Architecture III..... | 2 |
| Architectural Engineering 58..... | Building Construction I..... | 3 |
| Architectural Engineering 62..... | Architectural Drawing III..... | 1 |
| Mechanics 50..... | Mechanics..... | 5 |
| | Optional..... | 3 |
| | Technical Report III†..... | ½ |

*French preferred.

COURSES OF STUDY.

31

SECOND SEMESTER, 17½ hours credit.

| <i>Course number.</i> | <i>Subject.</i> | <i>Hours credit.</i> |
|-----------------------------------|-------------------------------|----------------------|
| Architectural Engineering 51..... | Architectural Design IV..... | 3 |
| Architectural Engineering 59..... | Building Construction II..... | 3 |
| Architectural Engineering 61..... | Building Sanitation..... | 1 |
| Architectural Engineering 63..... | Architectural Drawing IV..... | 1 |
| Mechanics 51..... | Strength of Materials..... | 4 |
| Mechanics 52..... | Testing Laboratory..... | 1 |
| Mechanics 53..... | Graphic Statics..... | 2 |
| Mechanical Engineering 54..... | Heating and Ventilation..... | 2 |
| | Technical Report IV†..... | ½ |

SENIOR YEAR.

FIRST SEMESTER, 19 hours credit.

| | | |
|-----------------------------------|--|---|
| Architectural Engineering 52..... | Architectural Design V..... | 2 |
| Civil Engineering 61..... | Stresses in Framed Structures..... | 5 |
| Civil Engineering 65..... | Reinforced Concrete..... | 3 |
| Economics 1 E..... | Elements of Economics..... | 3 |
| English 59..... | Advanced Composition..... | 3 |
| Electrical Engineering 64..... | Electrical Engineering for Architects..... | 3 |

SECOND SEMESTER, 15 hours credit.

| | | |
|-----------------------------------|--------------------------------|---|
| Architectural Engineering 53..... | Architectural Design VI..... | 2 |
| Architectural Engineering 57..... | Thesis..... | 3 |
| Architectural Engineering 65..... | Steel Construction..... | 3 |
| Mechanics 57..... | Hydraulic Cement..... | 1 |
| Engineering 52..... | Industrial Administration..... | 3 |
| Civil Engineering 52..... | Surveying..... | 3 |

EQUIPMENT.

The School of Engineering is a part of the University; hence the entire equipment of the University is also equipment of the School of Engineering in all things in which engineering students are concerned. The work of the Engineering School which is common to several schools of the University, such as mathematics, physics, chemistry, languages, etc., is carried on to some extent in buildings and by departments of instruction not exclusively for engineering students; while such work of the School as is technical and exclusively engineering in character is carried on by departments of instruction primarily for engineering students and largely in buildings erected for the special work of the School. Below is described that part of the general equipment of the University which pertains chiefly to the work of this School. For other equipment, see "The College" and descriptions of other schools of the University.

BUILDINGS.

The buildings erected exclusively for engineering work are Marvin Hall, the mechanical laboratory in connection with the power plant, and the Fowler Shops. The work in mining is provided for in Haworth Hall. For description of these buildings, see the General Information section.

LIBRARIES.

The general University library is available for use of engineering students. The engineering library contains books, periodicals, pamphlets, maps, and manuscripts for use in the study of civil, mechanical, electrical, and architectural engineering. The departmental libraries in chemistry, geology, physics and astronomy, and mathematics are open to engineering students. Large plates and other illustrative material for the use of architecture students are in the reading room of the architectural engineering department.

DRAWING ROOMS.

Drawing rooms in Marvin Hall, furnished with individual tables containing drawers for each student's outfit, cabinets for drawing boards, etc., are provided for the work in general mechanical drawing, machine design, bridge and structural design, and architecture. Drawing rooms in Haworth Hall are similarly provided for the work in mining engineering.

On the walls and in print cases are photographs and drawings of actual construction and blue prints of working drawings for bridges, railroad structures, sewers, waterworks, mine plants, buildings, etc.

LABORATORIES.

Care has been taken to provide laboratory equipment of maximum effectiveness in the teaching of undergraduates. In certain of the laboratories, moreover, the means are at hand for carrying on more advanced research work.

For the work in pure science the laboratories of the College departments of physics, chemistry, and bacteriology are available. In this way engineering students are afforded all necessary opportunities for gaining familiarity with the most approved methods of carrying on work in the respective branches. Chemical-engineering students continue for a much longer time in the use of the apparatus provided in the department of chemistry than do the other students. Similarly, electrical-engineering students continue in the use of the finer types of electrical measuring instruments, which are provided in the well-equipped laboratories of the physics department. Mining-engineering students, and those following the civil-engineering option

in sanitary and municipal work, draw largely also upon the pure-science laboratories, the former mainly in the lines of metallurgy and chemistry, the latter in the chemical and bacteriological examination of water and sewage.

In applied science the laboratories of the School of Engineering next come into use. Particular attention is paid to the work which is given to large numbers of engineering students irrespective of department groups. Among these are: the laboratory for the investigation of the strength of materials, which is provided with a special machine on which loads may be carried to a maximum of 200,000 pounds, and in which several smaller-capacity machines are employed for all student work; the laboratory for experimental work in hydraulics, which is equipped for the usual work in the measurement of flow of water over weirs, through pipes, and for measuring performance of pumps, water motors, etc.; the complete outfit of surveying instruments, by means of which the department of civil engineering carries on its work in connection with the teaching of surveying in all of its various refinements; the laboratory for the study of electrical machines of all kinds, and which is especially well equipped with respect to standardizing apparatus for the most accurate forms of electrical measuring instruments employed in engineering practice; the laboratory devoted to the study of electric-lighting problems, equipped with modern photometer and other apparatus adequate for the work; the laboratory for the study of steam- and gas-engine power development, equipped with many representative types of engines, boilers, and other lines of equipment necessary for an actual study of operating conditions; and the machine-construction laboratory, which is equipped with machines for the carrying on of all of the ordinary processes in shop work, but which is so employed that students may be considered to be studying methods employed in the production of machines rather than engaged in acquiring manipulative skill.

A third form of laboratory equipment is that applied to special problems in connection with the various lines of specialized work. Each of the departments is equipped in this way, all in very satisfactory measure with respect to undergraduate student work. The civil-engineering department is equipped to give special work for those engaged in the advanced branches of railway surveying, and for the investigation of road-making materials. It owns a complete outfit for its work carried on during the summer surveying-camp period. The department of mechanics is equipped to carry on special investigations in reinforced concrete, and with various other forms of material employed in engineering structures. The electrical-engineering department is provided with necessary equipment for carrying on research work with alternating-current machinery, in telephony, and with electrical measuring instruments. The mechanical-engineering department, in connection with the University power plant, is able to carry on many lines of investigation in steam-power generation, with gas engines, with refrigerating apparatus, and in the study of fuels and lubricating oils. With the proper equipment, and in coöperation with the department of metallurgy, students are enabled to make special studies of tool steels, and the effects of heat upon metals of various kinds. The mining engineering laboratories are equipped for large-scale tests on various ores, for washing coal in ten-ton lots, for the study of fuels and of coal-mine explosions. Students are given mine-surveying practice in the State Mine at Lansing and in the tunnels of the University heating system, and practice in tunneling and the use of explosives in the experimental mine on the campus.

In the lines of applied chemistry the equipment is of high grade and well adapted to the carrying on of work characteristic of the chemical industries as well as for the study of special metals and the analytical work on ores and the many other forms of material with which the industrial chemist must deal. In the rooms of the architectural-engineering department are deposited the many illustrative drawings, plates, and lantern slides which are of service in the study of architectural forms and in creative designing work, which fills so important a position in the training of the architect.

DESCRIPTION OF COURSES.

ARCHITECTURAL ENGINEERING.

Professor GOLDSMITH.
 Professor GRIFFITH.
 Professor RICE (H. A.).
 Mr. WHITTEN, Assistant Instructor.

1.—FREE-HAND DRAWING I. Two hours credit. First semester, M. W. F., 8:30 to 10:30. Charcoal and pencil drawing from the cast. Griffith.

2.—FREE-HAND DRAWING II. Two hours credit. Second semester, six hours. Theory of perspective, free-hand perspective, shades and shadows. Griffith.

3.—ARCHITECTURAL DESIGN I. Three hours credit. First semester, nine hours. A study of the elementary architectural forms and fundamental construction features, their employment in architectural composition, the classic orders. Drafting-room work and informal lectures. Goldsmith and Whitten.

4.—ARCHITECTURAL DESIGN II. Three hours credit. Second semester, nine hours. Continuation of course 3, the application of the orders in elementary design. A study and analysis of architectural composition based on the orders, designed to train the student in the æsthetics of architecture and the fundamentals of design. Drafting-room work and informal lectures. Goldsmith and Whitten.

5.—HISTORY OF ARCHITECTURE I. Three hours credit. First semester, three hours, M. W. F., at 8:30. An analytical study of architectural development of the historic styles, explaining the underlying principles of construction and design, influence of materials, and effects of religious and political conditions. The first semester will include the architecture of Egypt, Assyria, Persia, Greece, and Rome. Illustrated lectures, reading, and sketching. Goldsmith.

6.—HISTORY OF ARCHITECTURE II. Three hours credit. Second semester, three hours, M. W. F., at 10:30. Continuation of course 5, from the close of Roman supremacy through the periods of Byzantine, Romanesque and Gothic development, and the Renaissance. Illustrated lectures, reading, sketching, and research. Goldsmith.

7.—ARCHITECTURAL DRAWING I. One hour credit. First semester, three hours. Pencil drawing from casts of architectural ornament and historic details, designed to prepare the student for the free use of sketching in architectural composition and design. Goldsmith.

8.—ARCHITECTURAL DRAWING II. One hour credit. Second semester, three hours. Continuation of course 7. Pen, pencil, and brush work. Goldsmith.

9.—SHADES AND SHADOWS. One hour credit. First semester, three hours. Application of the principles of descriptive geometry in casting conventional shadows. Conventional rendering of architectural subjects. Goldsmith and Whitten.

50.—ARCHITECTURAL DESIGN III. Three hours credit. First semester, nine hours. Continuation of course 4. Problems in theoretical design, alternating with problems in constructive design, working drawings and details, applying the knowledge gained in course 58. Goldsmith.

51.—ARCHITECTURAL DESIGN IV. Three hours credit. Second semester, nine hours. Continuation of course 50. Problems in design of increased importance, alternating with problems in constructive design based on course 59. Goldsmith.

52.—ARCHITECTURAL DESIGN V. Two hours credit. First semester, six hours. A course of engineering design combining problems in engineering with architectural composition and applying the technical knowledge gained in the engineering courses. Goldsmith.

53.—ARCHITECTURAL DESIGN VI. Two hours credit. Second semester, six hours. Continuation of course 52. Goldsmith.

56.—HISTORY OF ARCHITECTURE III. Two hours credit. First semester, two hours. Continuation of course 6, including the classic and Gothic revivals and modern architecture in Europe and the United States. Illustrated lectures, reading, sketching, and research. Goldsmith.

57.—THESIS. Two hours credit. Second semester, six hours. An extended problem in architectural-engineering design requiring complete plans, elevations, section and construction details, with outline specifications of building materials and methods. The subject may be chosen by the student with the approval of the professor of architecture. Goldsmith.

58.—BUILDING CONSTRUCTION I. Three hours credit. First semester, three hours, M. W. F., at 9:30. A study of the principles of wooden construction and their application in structural design, working drawings, and details. This course considers building and finishing woods, framing of wooden buildings, details of exterior finish, interior woodwork, and cabinet work. Lectures, reading, and drafting-room work. Goldsmith.

59.—BUILDING CONSTRUCTION II. Three hours credit. Second semester, three hours, M. W. F., at 9:30. A study of the principles of masonry construction and their application. This course considers building stones, brickwork, terra cotta, simple cast-iron and steel work, fireproofing, and plastering. Lectures, reading, and drafting-room work. Goldsmith.

61.—BUILDING SANITATION. One hour credit. Second semester. Plumbing, sewerage, water-supply, and plumbing fixtures. Lectures, reading, and drafting-room work. Goldsmith and Whitten.

62.—ARCHITECTURAL DRAWING III. One hour credit. First semester, three hours. Continuation of course 8. Goldsmith.

63.—ARCHITECTURAL DRAWING IV. One hour credit. Second semester, three hours. Continuation of course 62. Goldsmith.

65.—STEEL CONSTRUCTION. Three hours credit. Second semester. A course in steel framing of buildings. Drafting-room work. H. A. Rice.

BACTERIOLOGY.

Assistant Professor C. C. YOUNG.

53E.—SANITARY WATER ANALYSIS. Five hours credit. First semester, daily, 8:30 to 10:30. (See chemistry 56E.) Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Open to students in engineering and to College Juniors and Seniors who have taken chemistry 3. C. C. Young.

For other courses in bacteriology, see The College.

CHEMISTRY.

Professor CADY.
 Professor DAINS.
 Associate Professor WHITAKER.
 Associate Professor ALLEN.
 Assistant Professor YOUNG (C. C.).
 Assistant Professor BRUCKMILLER.
 Assistant Professor FARAGHER.
 Mr. WHELAN, Instructor.
 Mr. LICHTENWALTER, Instructor.
 Mr. PARKHURST, Instructor.

2.—ADVANCED INORGANIC CHEMISTRY. Four or five hours credit. First semester. Recitations, M. W. F., at 8:30; laboratory, Tu. Th., 8:30 to 10:30, or 1:30 to 3:30. Chemical and mining-engineering students take four hours laboratory, others two hours. Cady, Faragher, and assistants.

3.—QUALITATIVE ANALYSIS. Four or five hours credit. Second semester. Recitations, Tu. Th., at 8:30; laboratory, M. W. F., 8:30 to 10:30, or 1:30

to 3:30. Chemical-engineering students take six hours laboratory, others four hours. Cady, Faragher, and assistants.

4.—ORGANIC CHEMISTRY I. Five hours credit. Junior, first semester, seven hours. Lectures and recitations, M. W. F., at 9:30; laboratory, Tu. Th., 1:30 to 3:30. Required of chemical-engineering students. Lectures, recitations, and laboratory work in aliphatic series. Must be preceded by courses 2 and 3. Dains.

5E.—ENGINEERING CHEMISTRY. Three hours credit. Second semester. Recitations, Tu. Th., at 9:30; laboratory, F., 1:30 to 4:30. Required of mechanical- and civil-engineering students. Cady and assistants.

50E.—GAS ANALYSIS. Two hours credit. Optional, first semester, four hours, by appointment. A laboratory course in the quantitative determination of the common gases, analysis of gaseous mixtures, natural gas, flue gas, etc. Must be preceded by course 54. Allen.

51A.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. Required of Junior chemical-engineering students. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 2 and 3. Whitaker and Parkhurst.

51B.—ORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. First semester, at 9:30. Required of Senior chemical-engineering students. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dye-stuffs, etc. Prerequisites, courses 2, 3, 4. Whitaker and Parkhurst.

52E.—ELECTROLYTIC ESTIMATION OF METALS. Two hours credit. Optional. Second semester, four hours, by appointment. A laboratory course. Must be preceded by course 54.

53E.—ANALYSIS OF BOILER FEED WATER. Two hours credit. Optional. First semester, four hours, by appointment. Must be preceded by course 54. C. C. Young.

54.—QUANTITATIVE ANALYSIS I. Five hours credit. Both semesters. First semester, ten hours, 10:30 to 12:30, or 3:30 to 5:30; second semester, ten hours, 10:30 to 12:30. Lecture and laboratory work. Must be preceded by course 3. Required of chemical- and mining-engineering students. Allen and assistants.

55.—QUANTITATIVE ANALYSIS II. Five hours credit. Second semester, ten hours, 1:30 to 3:30. Lecture and laboratory work. Required of chemical-engineering students. In the latter part of the course the volumetric analysis of ores and metallurgical products will be taken up. Allen and assistants.

56E.—SANITARY WATER ANALYSIS. Five hours credit. First semester, 8:30 to 10:30. (See bacteriology 53E.) Open to students in engineering and to College Juniors and Seniors who have taken chemistry 3. Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. C. C. Young and Bruckmiller.

59.—WATER ANALYSIS. Three hours. Second semester, by appointment. Laboratory work and conferences upon assigned readings. The course covers sanitary, mineral, and boiler-feed-water analysis, together with the principles and practice of the purification of water for municipal and other uses. Prerequisite, course 54. C. C. Young.

60.—ORGANIC CHEMISTRY II. Five hours credit. Junior, second semester, seven hours, M. W. F., at 9:30; laboratory, Tu. Th. afternoons, by appointment. A continuation of course 4. Lectures, recitations, and laboratory work, including the aromatic and other cyclic compounds. Must be preceded by course 4. Required of chemical-engineering students. Dains.

64.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, six hours, at 10:30. A course paying special attention to electrochemistry.

Lectures and laboratory work. Must be preceded by course 54, or by course 3 and physics 1E and 2E and mathematics 5E. Required of chemical- and electrical-engineering students; optional for mining engineers. Cady.

65.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, seven hours, at 10:30. A general course in theoretical and physical chemistry. Lectures and laboratory work. Required of chemical-engineering students. Cady.

Other courses in chemistry are open as optionals to chemical-engineering students. See The College.

CIVIL ENGINEERING.

Professor DALTON.*
 Professor RICE (H. A.).
 Professor WILLIAMS.
 Associate Professor HASKINS.
 Associate Professor MCNOWN.
 Assistant Professor BROWN (F. L.).
 Assistant Professor ROBERTS.

1.—ELEMENTARY SURVEYING. Three hours credit. First semester, two hours of class work, Tu. Th., at 10:30 and 11:30; one hour of field work, computation and plotting, on Tu. or Th., from 1:30 to 4:30. Required of civil- and mining-engineering Sophomores. Use and care of engineer's chain, transit and level. Adjustments of transit and level. Land surveying methods and computations. Prerequisite, mathematics 3. McNown.

2.—HIGHER SURVEYING. Three credits. Second semester, Tu. Th., at 9:30 and 10:30, with field work W. or F., at 1:30 to 4:30. Required of civil- and mining-engineering Sophomores. Topographic and hydrographic surveying. Control of surveys, including introduction to engineering astronomy. Prerequisite, civil engineering 1. McNown.

3.—SUMMER FIELD WORK. Ten hours a day for four weeks at the close of the college year is required of Sophomore civil-engineering students, and the same for two weeks is required of Sophomore mining-engineering students. A topographical survey of an area is made from a camp. Practice in taking topography by transit and stadia, and by plane table, measurement of a base line, triangulation, leveling, and determination of azimuth latitude and time, constitutes the work. Prerequisite, civil engineering 2. McNown and F. L. Brown.

4.—RAILWAY SURVEYING. Two hours credit. Second semester, Tu. Th., at 1:30. Required of civil-engineering Sophomores. A study of railway curves and earthwork, with field exercises. Prerequisite, civil engineering 1. McNown.

50.—ELEMENTARY SURVEYING. Three hours credit. Both semesters. Two hours of class work, Tu. Th., at 9:30 in the first and at 8:30 in the second semester. One hour of field from 1:30 to 4:30, on Friday in the first and on Monday in the second semester. Required of Senior mechanical, electrical, and architectural students. A brief course based on courses 1 and 2. McNown and Roberts.

51.—CARTOGRAPHY. Two hours credit. First semester, Tu. Th., from 1:30 to 4:30. Required of Junior civil-engineering students. Map projection and the preparation of an accurate topographical map based on the field maps prepared in civil engineering 3. Prerequisite, civil engineering 3. McNown.

52.—CITY PLANNING. Two hours credit. Second semester, W. F., at 8:30. Required of Junior sanitary students, and optional to Senior civil-engineering students. A study of city planning from the modern viewpoint, under such topics as city planning abroad, the American city, design of streets and street systems, parks and playgrounds, civic centers, water features, methods of acquiring land, and legislation. Lectures and assigned readings. McNown.

53.—GEODESY. Three hours credit. First semester. Two hours in classroom and one in field, and computation. By appointment. Optional to

*On leave of absence.

Seniors. A brief study of the construction, use, and adjustment of the higher instruments of precision, and their use in the determination of the size and figure of the earth, including a study of the application of the method of least squares to the adjustment of observations. Prerequisite, civil engineering 3. McNown.

55.—RAILWAY SURVEYING. Four hours credit. First semester, Junior year, Tu. Th., at 9:30, M. W., at 1:30. A study of methods of laying out and constructing railways, with field practice consisting of a location survey of a line of sufficient length to familiarize the student with standard methods of doing such work; calculation of waterways; bridge surveys; yards, turn-outs, and easement curves. Prerequisites, civil engineering 1, 2, 3, and 4. Williams.

57.—RAILWAY LOCATION. Three hours credit. Second semester, Junior year, M. W. F., at 11:30. The principles involved in the economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue, the fixed charges, the operating expense, and the dividend-paying capacity of the road. Prerequisite, civil engineering 55. Williams.

58.—RAILWAY TERMINALS AND SIGNALING. Two hours credit. First semester, Senior year, Tu. Th., at 8:30. A general study of terminal problems, the design of yard layouts and of terminal structures. Some time given to signal engineering. Prerequisite, civil engineering 55. Williams.

59.—RAILWAY CONSTRUCTION AND MAINTENANCE. Three hours credit. Second semester, Senior year, M. W. F., at 10:30. An advanced course in railway engineering, covering tunneling, economic handling of materials, masonry structures, trestles, timber preservation, as well as the theory and practice of railway maintenance. Prerequisite, civil engineering 55. Williams.

61.—STRESSES IN FRAMED STRUCTURES. Five hours credit. First semester, five hours, at 11:30. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 51 in mechanics. H. A. Rice.

62.—BRIDGE DESIGNING. Four hours credit. Second semester, eight hours, 1:30 to 4:30. A study in bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 61. H. A. Rice.

64.—MASONRY. Two hours credit. First semester, Senior year, Tu. Th., at 10:30. Stone and brick masonry; the science of proportioning concrete; foundations, including pile driving, cofferdams, pneumatic caissons, etc.; dams, retaining walls, piers and abutments, masonry bridges. Prerequisite, mechanics 50 and 51. Williams.

65.—REINFORCED CONCRETE. Three hours credit. Senior, first semester, M. W. F., at 10:30. A course in the modern theory and practice in the design of beams, floor slabs, columns, conduits, retaining walls, arches, and other forms of reinforced concrete construction. Mathematical theory, study of plans, and design of typical structures. Prerequisite, mechanics 51. H. A. Rice.

66.—REINFORCED CONCRETE DESIGN. One hour credit. Second semester, Senior. This course supplements course 65. Designs of beams, slabs, retaining walls, etc., together with a complete analysis of a reinforced-concrete arch, are made. Prerequisite, civil engineering 65. H. A. Rice.

67.—HIGHER STRUCTURES. Three hours credit. Second semester, Senior, M. W. F., at 9:30. An advanced course in bridges, including swing bridges, cantilever bridges, suspension bridges and arches. Some work will be given in calculations of deflections and statically indeterminate stresses. H. A. Rice.

70.—SANITARY ENGINEERING I. Three hours credit. First semester, three hours, M. W. F., at 11:30. An elementary course in the collection, removal and disposal of city sewage. Principles of the design and construction of sewers and storm drains. The collection and distribution of water

supplies. Requisites of a supply as to quality and quantity. Design of distribution, collection, and storage works. Prerequisite, mechanics 55. Haskins.

71.—SANITARY ENGINEERING II. Fours hours credit. Second semester, four hours, M. Tu. W. Th., at 9:30. A more detailed study of the subjects treated in course 59. The purification of public water supplies and the treatment of sewage. Haskins.

72.—SANITARY ENGINEERING DESIGN. Five hours credit. Second semester, five hours, at 1:30. An advanced course to be taken simultaneously with course 71. The student works out, by practical problems, the principles learned in courses 70 and 71. Haskins.

73.—SANITARY SCIENCE AND PUBLIC HEALTH PROBLEMS. Two hours credit. First semester, two hours, Tu. Th., at 9:30. A broad general view of the large body of sanitary science upon which the modern practice of sanitation is based. The effects of good practice in such matters as public water supply, sewerage and drainage, state and federal control over the pollution of streams, vital statistics. Haskins.

74.—WASTE AND GARBAGE DISPOSAL. One hour credit. Second semester, one hour, M., at 11:30. A lecture course in the practice of street cleaning, refuse and garbage collection and disposal. Haskins.

75.—ROADS AND PAVEMENTS. Two hours credit. Second semester, Senior year, Tu. Th., at 11:30. A study of methods used in the construction and improvement of country roads and city streets. An extended study of paving materials and of the principles governing the selection of a pavement. Some time given to laboratory testing of materials. Prerequisite, civil engineering 1, 2, 3, and 4. Williams.

ECONOMICS.

Professor MILLIS.
Associate Professor BOYNTON.
Assistant Professor HODGES.

1E.—ELEMENTS OF ECONOMICS. Three hours credit. First semester, M. W. F., at 11:30. This course endeavors to explain the general laws of man's relation to wealth. Special attention is given to the parts of the subject of special interest to engineering students, such as corporations, the economic activities of municipalities, organized labor, and the general labor problem. Millis.

3.—ECONOMIC HISTORY OF THE UNITED STATES. Three hours credit. Second semester, at 9:30. Attention is given to colonial agriculture, industry, and trade as an introduction to the course. After 1789, the main lines of study are the banking, transportation, and tariff history of the United States, with especial attention to the development of the natural resources, and the rise of manufactures, and the expansion of corporate methods. Prerequisite, course 1. Boynton.

3E.—THE ELEMENTS OF ACCOUNTING. Three hours credit. First semester, M. W. F. This course serves as an introduction to the field of accounting. The principles underlying various accounting practices are studied, and enough problems are solved to familiarize the student with the more common and simpler forms used in representing the progress and condition of a business firm. Prerequisite, course 1E or its equivalent. Hodges.

ELECTRICAL ENGINEERING.

Professor SHAAD.
Associate Professor JOHNSON (C. A.).
Mr. JOHNSON (F. E.), Instructor.
Mr. CURFMAN, Instructor.

Courses 50 to 52, and 54 to 58, inclusive, and 61 are required of all electrical-engineering students. Courses 50, 53, 54, and 55 are required of mechanical-engineering students. Courses 59 and 62 are optional for electrical-engineering students.

50.—DYNAMO MACHINERY. Three hours credit. Junior, first semester, three hours, at 10:30 for electrical-engineering students, and at 8:30 for

Senior mechanical-engineering students. Theory of direct-current generators and motors. Prerequisites, physics 1E and 2E. C. A. Johnson.

51.—THEORY OF ALTERNATING CURRENTS. Five hours credit. Junior, second semester, five hours, at 8:30, for electrical-engineering students. A mathematical treatment of alternating-current phenomena and the theory of alternating-current machinery, fundamental types. Prerequisite, course 50. Shaad.

52.—DYNAMO MACHINERY. Five hours credit. Senior, first semester, five hours, at 8:30. Advanced theory of alternating-current machinery. Shaad.

53.—THEORY OF ALTERNATING CURRENTS. Three hours credit. Second semester, three hours, M. W. F., at 11:30 for Senior mechanical-engineering students. A study of the theory of alternating currents and alternating-current machinery, together with a discussion of motor applications. Prerequisite, course 50. Shaad.

54.—ELECTRICAL LABORATORY. One and one-half hours credit. Junior, first semester, three hours, two days per week on alternate weeks, 1:30 to 4:30. An experimental course for the purpose of illustrating the principles of direct-current dynamo machinery and acquainting the student with the types and performance of direct-current apparatus. Must be preceded or accompanied by course 50. F. E. Johnson and Curfman.

55.—ELECTRICAL LABORATORY. One and one-half hours credit. Junior, second semester, three hours, two days per week on alternate weeks, 1:30 to 4:30. A continuation of course 54. Must be preceded or accompanied by course 51. More advanced work with direct-current machinery is given and experiments with alternating-current apparatus are introduced. Some time is devoted to the calibration of electrical instruments. F. E. Johnson and Curfman.

56.—ELECTRICAL LABORATORY. One and one-half hours credit. Senior, first semester, three hours, two days per week, 1:30 to 4:30. Advanced experiments with electrical machinery and the testing of machines, chiefly of alternating-current types. Must be accompanied by course 52. C. A. Johnson and F. E. Johnson.

57.—ILLUMINATING ENGINEERING. Three hours credit. Senior, second semester, three hours, Tu. Th., at 11:30. A course in illumination and photometry, in which the available light sources are studied and the methods of application to artificial illumination of streets and buildings are discussed. Laboratory and field work in the measurement of light sources and illumination. C. A. Johnson.

58.—ELECTRIC POWER TRANSMISSION AND ELECTRIC RAILWAYS. Five hours credit. Senior, second semester, five hours, at 9:30. A series of lectures and recitations devoted to the study of the principles involved and the methods used in the design of transmission and distributing systems and the theory and practice of the design, construction, and operation of electric railway systems. Prerequisite, course 52. C. A. Johnson.

59.—ELEMENTARY TELEPHONY. Five hours credit. Second semester, five hours by appointment. Lectures, recitations, and laboratory work. The principles that underlie all telephone apparatus, and practical experiments with the fundamental telephone transmitters, receivers, and central-station arrangements. Optional for Juniors or Seniors. Shaad.

60.—ELEMENTS OF ELECTRICAL ENGINEERING. Three hours credit. First semester, at 9:30. A course covering the general field of electrical engineering, and prepared especially for civil-engineering students. Junior or Senior year. Shaad.

61.—PROFESSIONAL THESIS. Senior, first semester, three hours, and second semester, nine hours, by appointment. Shaad, or other instructors, according to the line of work chosen.

62.—CENTRAL STATIONS. Three hours credit. Three hours in the classroom, M. W. F., at 10:30, and one period in the drafting room each week. A study of the design, construction, operation, and management of central electrical stations and substations. Shaad.

63.—ADVANCED ELECTRICAL LABORATORY. Five hours credit. Seniors, second semester, by appointment. A continuation of course 56. More advanced and extended experiments with electrical machinery and circuits, introducing the experimental study of transient electrical phenomena. C. A. Johnson.

64.—ELECTRICAL ENGINEERING FOR ARCHITECTS. Three hours credit. First semester, three hours, at 9:30. A course covering electrical installations for buildings. For students in architectural engineering, either Junior or Senior year. Shaad.

ENGINEERING.

Dean WALKER.

1.—ENGINEERING LECTURES. First semester, Tu., at 11:30. A course of lectures given to Freshmen during the first semester. The purpose is twofold: first, to give the student a more adequate idea of engineering as a profession; second, to assist those who have not decided upon the courses of study to be pursued to gain a more definite conception of the field covered in each. About one-third of the course is given by the Dean and the remainder by other members of the engineering faculty.

51.—MANUFACTURING. Two hours credit. First semester, Senior, Tu. Th., at 8:30. Manufacturing processes employed in certain typical industries; elements of cost; power as a factor in costs; power applications; engineering practice in the industries with especial reference to selection of equipment. Walker.

52.—INDUSTRIAL ADMINISTRATION. Three hours credit. Second semester, at 8:30. Development of modern industrial systems; forms of ownership—partnerships and corporations; contract principles, and practice in contract writing for engineering work; organization of transportation and manufacturing companies; analysis of costs; labor wage systems. Special lectures on real property, agency and torts. Mining engineering students are allowed to take a portion of the course for two hours credit. Walker and law lecturers.

ENGINEERING DRAWING.

Associate Professor HOOD.
Assistant Professor COCHRAN.
Assistant Professor ROBERTS.

1.—FREE-HAND DRAWING. One and one-third hours credit. Freshman, first twelve or six weeks of both semesters; six hours or twelve hours; first semester, M. W. F., 8:30 to 10:30; or M. W. F. Sat., 8:30 to 11:30; or M. Tu. W. Th., 1:30 to 4:30; or F., 1:30 to 4:30, and Sat., 8:30 to 11:30. Second semester, M. W. F., 8:30 to 10:30; or M. W., 1:30 to 4:30. Engineering lettering in pencil and in ink. Free-hand working sketches and perspective sketches of simple machine parts. Hood, Cochran, and Roberts.

2.—ELEMENTARY MECHANICAL DRAWING. Two-thirds hour credit. Freshman, six or three weeks of both semesters; six hours or twelve hours. Same hours as in course 1. Working drawings of simple machine parts. Penciling, tracing, and blue-printing. Detailing machine parts from assembly drawings. Hood, Cochran, and Roberts.

3.—DESCRIPTIVE GEOMETRY. Three hours credit. Freshman, second semester, three hours, M. W. F., at 8:30, 9:30, 10:30, 11:30, and 3:30; also first semester, at 11:30. Principles of projection. Execution of a large number of original exercises. Hood and Cochran.

4.—MACHINE DRAWING. Two hours credit. Freshman, eighteen weeks or nine weeks of both semesters; six hours or twelve hours. Same hours as in course 1. Sketches of machine parts and preparation of working drawings; detailing of machines from sketches, notes, assembly drawings and assembled machines; tracing and blue-printing; notes and lectures on drafting-room methods. Each student prepares complete drawings for some simple machine. Hood, Cochran, and Roberts.

ENGLISH LANGUAGE AND LITERATURE.

Associate Professor RAYMOND.
Mr. MCCARTY, Instructor.
Miss LAIRD, Instructor.

The instruction in this department, while in essentials parallel to that in the College, is shaped with special reference to the other work of engineering students. Three of the courses here numbered are required before graduation; for students who wish to spend more time in work of this kind a research class is provided in the Graduate School, and appropriate classes in the College are open.

1E.—RHETORIC I. Three hours credit. First semester, three hours, 8:30, 9:30, 10:30, 11:30, 2:30; second semester, at 11:30. Written exercises and papers, with study of language usage. Required of all Freshmen. McCarty, Laird, and Raymond.

2E.—RHETORIC II. Two hours credit. Second semester, two hours, 8:30, 9:30, 10:30, 11:30, 3:30. Continuation of course 1E. McCarty, Laird, and Raymond.

59.—ADVANCED COMPOSITION I. Three hours credit. First semester at 10:30 and 11:30; second semester, at 8:30 and 9:30. Practice in the gathering and analyzing of material, and in the presentation of information and opinion in scientific papers, and study of the methods used in these and other papers. Required of all engineering students, one semester in Junior or Senior year. Raymond.

59b.—ADVANCED COMPOSITION II. Three hours credit. Continuation of course 59, with special regard to writing for publication. Optional for Seniors. Raymond.

For other work related to that of the English department see the courses in engineering, and under The College.

The department of English is provided with references, illustrative matter, and other helps for reading in general and in engineering literature, and in the preparation of special papers.

GEOLOGY.

Professor HAWORTH.
Associate Professor TWENHOFEL.
Assistant Professor TODD.

1.—ELEMENTARY GEOLOGY. Five hours credit. First semester, 8:30, 9:30; second semester, 8:30, 9:30, 10:30, 11:30, 2:30. A study of the elementary principles of geology, including a general outline of geologic principles and geologic agencies. An acquaintance with the elements of chemistry, zoölogy, and botany will be of advantage in this course. Required of Junior civil and Sophomore mining engineering students. Todd and Twenhofel.

54.—ECONOMIC GEOLOGY I. Three hours credit. First semester, three hours, M. W. F., at 9:30. A general study of the metallic and nonmetallic products of the mine and quarry, considered from a scientific and practical standpoint, including the nature, origin, amount, and geographic and geologic distribution of the same. Must be preceded by elementary chemistry and course 1, and mineralogy 10. Required of Junior mining-engineering students. Lectures and library work. Haworth.

55.—ECONOMIC GEOLOGY II. Two hours credit. Second semester, two hours, Tu. Th., at 10:30. A continuation of course 54. Nonmetallic products. Haworth.

Other courses in geology are open as optionals to engineering students. For details, see the courses listed under The College.

GERMAN.

Assistant Professor BRIGGS.
Mr. HAWKINS, Instructor.

1.—OUTLINE OF GRAMMAR. Five hours credit. First semester, five hours, at 10:30. The first twenty-two lessons of the Otis-Carruth Grammar, with composition exercises; Carruth's Reader, about fifty pages. Hawkins.

2.—GRAMMAR, READER, AND "TELL." Five hours credit. First semester, five hours, at 1:30; second semester, five hours, at 10:30. The last eight lessons of Carruth's Grammar; Carruth's Reader completed. Schiller's Wilhelm Tell. Hawkins.

3.—PROSE CLASSICS. Five hours credit. First semester, five hours, at 8:30; second semester, five hours, at 1:30. Lessing's Minna von Barnhelm; extracts from Schiller's Der dreissigjährige Krieg, preceded by a review of grammar. Briggs.

4.—(Students wishing German 4 either semester will be accommodated in suitable sections in the College.) Five hours. Five credits.

6.—SCIENTIFIC PROSE. Three hours credit. Either semester, three hours, at 9:30. Lassar-Cohn's Die Chemie im täglichen Leben, Scientific Reader, and a general survey of German scientific literature. Intended to promote rapid, intelligent reading of scientific German. Briggs.

MACHINE CONSTRUCTION.

Assistant Professor JONES (F. E.).
Mr. WILTFONG, Instructor.
Mr. ROCKLUND, Instructor.
Mr. WHITE, Instructor.

The work given is designed to suit the needs of engineering students. It consists of practice work following demonstrations and recitations in the classroom. Textbook preparation and note writing are required in the class work. One hour of each regularly assigned weekly period is devoted to classroom work during a portion of the semester. In the advanced courses attention is given to modern methods of welding, heat treatment of high-carbon steels, machine-shop construction, the grouping of machines, and methods followed in standardizing production.

1.—FOUNDRY PRACTICE. One hour credit. Both semesters, three hours per week. Molding, and management of the cupola furnace and brass furnace. Practice in melting and pouring iron and nonferrous alloys. Each squad of students is required to have entire charge of the melting and casting of a heat of iron at least once during the course. Required of mechanical, electrical- and chemical-engineering students. Rocklund.

2.—PATTERN MAKING. One hour credit. Both semesters, three hours per week. The principles of pattern making are studied in a practical way by having each student make patterns that are actually used in the foundry. Required of students in mechanical, electrical and chemical engineering. F. E. Jones.

3.—FORGING. One hour credit. Both semesters, three hours per week. Complete course, including stock calculations, bending, drawing, welding, tempering, and hardening. Required of all excepting architectural students. Wiltfong.

4.—MACHINE SHOP AND PATTERN MAKING OR MOLDING. One hour credit. Second semester, three hours per week. This is an abbreviated course arranged for students who do not take the regular courses 1, 2, and 5. The work includes a half semester of bench work in the machine shop, alternating with a half semester of either pattern making or molding. Required of students in civil and mining engineering. White and F. E. Jones or Rocklund.

5.—BENCH WORK. One hour credit. First semester, three hours per week. A machine-shop course in the use and care of tools; practice in filing, chipping, drilling, and riveting. Required of students in mechanical, electrical, and chemical engineering. White.

6.—MACHINE TOOL WORK I. One hour credit. Second semester, three hours per week. Principally lathe work. Includes cutting off stock, centering, straight and taper turning and thread cutting; turning steel, wrought iron, cast iron and brass. Required of students in mechanical, electrical, chemical and mining engineering. White.

7.—MACHINE TOOL WORK II. One hour credit. Second semester, three hours per week. Use of planer, shaper, milling machine, boring mill, turret lathe; laying out and making machine parts from the drawing; gear cutting. Required of students in mechanical engineering. White.

8.—ADVANCED MACHINE SHOP PRACTICE. One hour credit. First semester, three hours per week. Tool making. Hardening and tempering; grinding; autogeneous welding; jig making; preparing and using high-speed and alloy steels; assembling machinery. Required of students in mechanical engineering. White.

MATHEMATICS.

Professor VAN DER VRIES.
Professor ASHTON.
Assistant Professor JORDAN.
Mr. WHEELER, Instructor.
Mr. LEFSCHETZ, Instructor.
Mr. LARSEN, Instructor.

1.—SOLID GEOMETRY. Two hours credit. Second semester, two hours, at 11:30. The usual theorems and constructions of standard textbooks and applications to the mensuration of surfaces and solids. Larsen.

2.—COLLEGE ALGEBRA. Three hours credit. First semester, three hours, 8:30, 9:30, 10:30, 2:30, 3:30; second semester, three hours, 8:30. Review of elementary algebra; graphic representation, logarithms, determinants. Required of all Freshmen in the School of Engineering. Jordan, Wheeler, Lefschetz, and Larsen.

3.—PLANE TRIGONOMETRY. Two hours credit. First semester, two hours, 8:30, 9:30, 10:30, 2:30, 3:30; second semester, two hours, 8:30. The six trigonometric functions, principal formulas of plane trigonometry, solution of triangles and practical problems. Required of all Freshmen in the School of Engineering. Jordan, Wheeler, Lefschetz, and Larsen.

4E.—ANALYTIC GEOMETRY. Five hours credit. First semester, five hours, at 9:30; second semester, five hours, 8:30, 9:30, 10:30, 2:30. Elementary theory of equations, Horner's method, the straight line and circle, conic sections, higher plane curves, solid analytic geometry. Required of all Freshmen in the School of Engineering. Ashton, Jordan, Wheeler, and Lefschetz.

5E.—CALCULUS I. Five hours credit. First semester, five hours, 8:30, 10:30, 11:30; second semester, five hours, at 9:30. Differential calculus, applications to geometry and mechanics, maxima and minima, integral calculus, simple applications to length, areas, and volumes. Required of all Sophomores in the School of Engineering. Ashton, Jordan, Wheeler, and Lefschetz.

6E.—CALCULUS II. Three hours credit. First semester, three hours, at 11:30; second semester, three hours, 8:30, 9:30, 10:30. Applications of the calculus to problems of solid geometry, double and triple integration, applications to areas, volumes, centers of gravity, and moments of inertia; simple differential equations. Required of all Sophomores in the civil, electrical, and mechanical courses. Ashton, Jordan, and Lefschetz.

57E.—SELECTED TOPICS IN ENGINEERING MATHEMATICS. Second semester, three hours, at 11:30. Complex numbers and vectors, exponential and trigonometric series, hyperbolic functions, differential equations of electrical and mechanical engineering, empirical curves, methods of approximation and numerical calculation. The course may be modified to suit the needs of the class. Optional for Juniors, Seniors, and graduates. Jordan.

For other courses in mathematics, see The College.

MECHANICAL ENGINEERING.

Professor WALKER.
Associate Professor SIBLEY.
Associate Professor SLUSS.
Assistant Professor GARVER.

1.—MACHINE DRAFTING. One hour credit. Sophomore, first semester, M. or Tu., 1:30 to 4:30, three hours. Making of working drawings from sketches of assembled parts, followed by an assembly drawing from detailed working drawings. Garver.

2.—MECHANISM. Three hours credit. Sophomore, first semester, Tu. Th., at 9:30, and F., 1:30 to 4:30. A study of the motion of machine parts and of methods of transmission of motion by gears, belts, cams, and links. Recitations and drawing for mechanical-engineering students. Text, Sibley's Pure Mechanism. Garver.

3.—ELEMENTARY MACHINE DESIGN. Three hours credit. Sophomore, second semester, M. W., at 9:30; Tu., 1:30 to 4:30. Design of representative machine parts and study of their relative motions. For electrical-engineering students. Garver.

4.—STEAM MACHINERY.—Two hours credit. Sophomore, second semester, two hours, Tu. Th., at 10:30. (a) Fuels, combustion, and steam generation. (b) A study of boiler and engine types. Principal text, Heat Engines, by Allen and Bursley. Required of electrical- and architectural-engineering students. Sluss.

5.—ENGINES AND BOILERS. Three hours credit. Sophomore, second semester, M. W. F., at 9:30; and five exercises in the steam laboratory, Sat., 8:30 to 12:30. A brief study of the general problem of steam power generation from the standpoint of the installing engineer. Text, Heat engines, by Allen and Bursley. Required of civil-engineering students. Physics 1E is a prerequisite. Garver.

6.—STEAM ENGINEERING. Four hours credit. Sophomore, second semester, M. W. F., at 8:30, and W. Th., 1:30 to 4:30. Elements of steam machinery, with special reference to combustion of fuels, boiler types, and engine mechanism, including the study of valve gears. Laboratory practice in proximate analysis of coal, and flue gas analysis. For mechanical-engineering students. Chemistry 2 is a prerequisite. Sluss.

50.—MACHINE DESIGN. Two hours credit. Junior, second semester, Tu. Th., at 10:30, and M. Th., 1:30 to 4:30. Solution of problems in the design of general machine parts, including cylinders, plates, springs, riveted joints, bearings, journal shafts, gears, pulleys, and belts. Lectures, recitations, and drawing. Garver.

51.—THERMODYNAMICS. Three hours credit. Junior, first semester, M. W. F., at 8:30. The relation between heat and mechanical energy; theory of heat engines. Must be preceded by Physics 1E and calculus. Required of mechanical-engineering students. Walker.

52.—HEAT-ENGINE THEORY. Three hours credit. Junior, first semester, M. W. F., at 9:30. A course for electrical-engineering students, treating the science of thermodynamics more briefly than in the preceding course and including engine applications. Garver.

53.—MECHANICS OF HEAT ENGINES. Two hours credit. Junior, second semester, two hours, Tu. Th., at 9:30. Valve gears and governors of steam and internal combustion engines and turbines. Centrifugal inertia and shaking forces of the moving parts. Required of electrical-engineering students. Course 52 is a prerequisite. Sibley.

54.—HEATING, VENTILATING AND COOLING. Two hours credit. Junior, second semester, two hours, at 11:30. Laws of heat transfer, amount of air required for ventilation, methods and apparatus employed in modern buildings, central heating plants. Sibley.

55.—REFRIGERATION. Three hours credit. Optional, first semester, M. W. F., at 9:30. Principles of mechanical refrigeration. Ice-manufacturing and cold-storage plants from the standpoint of American practice.

Recitation, designing-room work, and laboratory exercises with ammonia machine. Sluss.

56.—STEAM-ENGINE AND TURBINE DESIGN I. Three hours credit. First semester. Two hours recitation and three hours drawing per week. Includes a brief review of the thermodynamics of engines and turbines. Determination of sizes for given horsepower; methods of compounding, regulation and balancing; study of details, including valves and valve gears, cylinders, rotating and reciprocating parts of engines, and nozzles, blades, and rotors of turbines. Required of mechanical-engineering students. Sibley.

57.—STEAM-ENGINE AND TURBINE DESIGN II. Three hours credit. Second semester. Application of principles covered in course I to the design of special types. Optional for mechanical-engineering students. Sibley.

58.—INTERNAL-COMBUSTION MOTORS I. Three hours credit. Senior, first semester, M. Tu., 1:30; W. Th., of alternate weeks, 1:30 to 4:30. General theory and practice of gas-engine design and construction. Sibley.

59.—INTERNAL-COMBUSTION MOTORS II. Three hours credit. Senior, optional, second semester, by appointment. Application of principles covered in course I to the design of special types of gas-engines. Sibley.

60.—SHOP METHODS AND EQUIPMENT. One and one-half hours credit. Second semester, Friday at 10:30. One hour recitation and three hours laboratory per week. A study of the design, construction and operation of the modern machine shop. Small tools and equipment; machine tools and shop layouts, safety devices; the routing and tracing of work; theory of time studies and instruction-card writing; cost accounting. Sibley.

61.—STRUCTURAL DESIGN. First semester, M. W. F., at 11:30. Stresses in steel and reinforced concrete buildings, and design of members of the structure; design of chimneys, bins, and retaining walls. Optional for Seniors. Sibley.

62.—INDUSTRIAL-PLANT DESIGN. Three hours credit. Second semester, nine hours by appointment. Planning of manufacturing plants; location, transportation; routing of work; handling material. Senior optional. Sibley.

64.—MECHANICAL LABORATORY. One hour credit. First semester, Junior, W. or Th., 1:30 to 4:30. Calibration of thermometer and indicator springs, physical properties of lubricating oils, valve setting, commercial testing of boilers, engines, and pumps. For mechanical-engineering students. Sluss and Garver.

65.—POWER LABORATORY. One and one-half hours credit. Senior, second semester, M. or Tu., 1:30 to 4:30. Calibration of apparatus, fuel testing, laboratory tests of steam and gas prime movers, complete power-plant test. Outside preparation of preliminary and final reports. Prerequisites, mechanical-engineering 4, 52 and 53. For electrical-engineering students. Sluss.

66.—HEAT-ENGINE LABORATORY. One and one-half hours credit. Senior, second semester, M. or Tu., 1:30 to 4:30. Study of experimental engineering methods and their application to complete tests of boilers, steam and gas prime movers, compressors, and refrigerating units. Drill in report writing, and outside reading of literature bearing on power development. Prerequisites, mechanical-engineering 6, 51, and 56. For mechanical-engineering students. Sluss.

67.—THESIS. Three hours credit. Senior, both semesters, Friday, 1:30 to 4:30. Sibley and Sluss.

68.—SUMMER VACATION WORK. Two months to be spent in regular work in some shop or manufacturing plant of good standing. A report on this work, with a certified statement from the shop foreman or the superintendent, must be presented before credit can be given.

MECHANICS.

Professor RICE (H. A.).
 Professor WILLIAMS.
 Assistant Professor BROWN.
 Assistant Professor ROBERTS.
 Assistant Professor JONES (J. O.).

50.—MECHANICS. Five hours credit. Junior, first semester, five hours, at 9:30, 10:30, 11:30; second semester, 10:30. A study of the laws of statics and dynamics. Action of forces upon bodies, and the resulting motions. Required of all engineering students. Prerequisite, calculus I. Brown and Roberts.

51.—STRENGTH OF MATERIALS. Four hours credit. Junior, first semester, four hours, 8:30; second semester, 8:30, 9:30, 10:30. The theory of resistance to stress and application to engineering construction. Required of all engineering students. Prerequisite, mechanics 50. Brown, Roberts, J. O. Jones.

52.—TESTING OF MATERIALS. One hour credit. Junior, second semester, four hours, M. W. Th. or F., afternoon, or Sat. morning. A laboratory course to accompany course 51. The testing of iron, steel, wood, and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Brown and Roberts.

53.—GRAPHIC STATICS. Two hours credit. Junior, second semester, nine hours, 1:30 to 4:30. The properties of equilibrium polygons and other methods of representing the actions of forces, with application to the determination of stresses in beams, trusses, and arches. Lectures and drawing. Prerequisite, mechanics 50. Brown.

54.—ENGINEERING MATERIALS. Two or five hours credit. First semester, ——— hours, by appointment. A study of the methods of manufacture of structural materials and the different means and machines used in their testing. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the laboratory. Recitations, lectures, library, and laboratory work. Optional for Seniors. Prerequisite, mechanics 51. H. A. Rice.

55.—HYDRAULICS. Three hours credit. First semester, 9:30; second semester, three hours, 9:30 to 10:30. A study of the laws governing the pressure and flow of liquids. Calculation of the flow through pipes and over weirs. The principles and types of pumping and hydraulic power machinery. Required of Junior civil and Senior mechanical-engineering students. Prerequisite, mechanics 50. J. O. Jones.

56.—HYDRAULIC LABORATORY. One hour credit. First and second semesters, two hours, M. W. or F., 3:30 to 5:30. A course to accompany course 55. Experimental work with the flow of water over weirs and through orifices and pipes, and in testing hydraulic machinery. Required of Junior civil and Senior mechanical-engineering students. J. O. Jones.

57.—HYDRAULIC CEMENT. One hour credit. Second semester, two hours, M. or Th., 3:30 to 5:30. A laboratory course in testing hydraulic cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. For Senior civil-engineering students. Prerequisite, civil engineering 64. Williams.

58.—HYDRAULIC POWER. Three hours credit. First semester, by appointment. Water-power development. Rainfall and runoff, stream flow, preliminary plant layout, selection of standard water turbines, turbine design. Senior optional. J. O. Jones.

METALLURGY.

Associate Professor WHITAKER.
Mr. PARKHURST, Instructor.

57.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours credit. Second semester, five or ten hours, Tu. Th., 1:30 to 3:30. The first half of the semester is devoted to the fire assay of gold, silver, and other metals; the second half to the volumetric assay of ores and furnace products. Junior mining-engineering students are required to take the entire course, carrying five credits; the Senior chemical-engineering students are required to take fire assaying the first half of the semester, and will receive three credits. Whitaker and Parkhurst.

61E.—METALLURGY I. Three hours credit. First semester, three hours, at 11:30. General metallurgy and the metallurgy of iron and steel. Lectures and recitations. Must be preceded by chemistry 3. Required of Junior mechanical-engineering students and Senior chemical-engineering students. Whitaker.

62E.—METALLURGY II. Three hours credit. Second semester, three hours, M. W. F., at 9:30. Metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Required of Senior mining- and chemical-engineering students. Prerequisite, chemistry 3. Whitaker.

63.—METALLURGICAL LABORATORY. Either semester, two hours, by appointment. Pyrometric and calorimetric measurements, preparation of silicates and alloys, oxidation and reduction reactions, amalgamation, chlorination, cyaniding and leaching, etc. Optional for Juniors, Seniors, and graduate students who have taken or are taking course 61E or course 62E. Whitaker.

64E.—IRON AND STEEL. Two hours credit. Second semester, two hours, Tu. Th., 9:30. A repetition in briefer form of course 61E. Required of Junior mining-engineering students. Whitaker and Parkhurst.

65E.—GENERAL METALLURGY. Two hours credit. First semester, Tu. Th., 11:30. Physical properties of metals and alloys, thermal analysis, the measurement of high temperatures, refractories, slags, matte bullion, typical metallurgical operations. Required of chemical engineers. Whitaker.

MINERALOGY.

Professor HAWORTH.
Assistant Professor TODD.

10.—ELEMENTARY MINERALOGY I. Five hours credit. Sophomore, second semester, ten hours, 3:30 to 5:30. A brief course in crystallography, blowpipe analysis, and systematic mineralogy, consisting of lectures and laboratory work. Todd.

61.—PETROGRAPHY. Five hours credit. First semester. This course includes a study of the mineralogical and chemical composition of rocks, their origin, structural features, and classification. Haworth.

Other courses in mineralogy are open to engineering students as optionals. For these, see The College.

MINING ENGINEERING.

Professor TERRILL.
Professor HUMBLE.
Mr. GRIDER, Instructor.

1.—MINING METHODS. One hour credit. Both semesters, M. F., at 11:30. Two lectures per week on methods of prospecting, developing, and working mineral beds, masses, veins, etc. Study of methods used in mining regions for certain classes of deposits. Includes a visit to the lead-zinc district of Kansas and Missouri, and a report. Terrill.

50.—MINE SURVEYING. One hour credit. First semester, three hours per week. Instruments and methods used for underground traverse and connection surveys; shaft plumbing and special problems. Field work

includes survey of tunnels under campus and actual mine surveys. Prerequisite, civil engineering 1, 2, and 3. Terrill.

51.—EXCAVATION AND EXPLOSIVES. Two hours credit. Second semester, Tu. Th., 9:30, and a minimum of ten three-hour periods of laboratory work. (a) Excavating machinery and tools. Excavation, drilling, tunneling, shaft sinking, stripping, supporting excavations with pillars, timber, masonry, rock filling, etc. Handling and transporting material. Explosives, composition, manufacture and use. (b) Practice in the above carried out in the experimental mine. Grider.

52.—MINING LAW. One hour credit. Second semester, alternate years. Outline of the laws relating to the mining industries. Recitations and lectures. Humble.

53.—ORE DRESSING I. Two hours credit. First semester, one lecture and three hours of laboratory work. Preliminary breaking, roll crushing, jigging, coarse screening, coal washing. Required of students in coal and metal mining. Terrill.

54.—METAL MINING. Two hours credit. First semester, Tu. Th., 11:30. Methods of prospecting and mining all kinds of mineral deposits; study of special methods, and costs of working large ore deposits; ventilation; control and measurement of air currents; surface and underground haulage; compressed-air application. Prerequisites, mining engineering 1 and 51. Grider.

55.—MINING HYDRAULICS. Two hours credit. First semester, M. W., at 11:30. Theory of hydraulics, flow through orifices, tubes, and pipes; flow in conduits and rivers; measurement of water; hydraulic motors, pumps and hydraulic machinery; gravel deposits, drift mining, ground sluicing, hydraulic mining, river mining, dredging, and drainage. Grider.

56.—MINE PLANT AND MILL DESIGN I. Two hours credit. First semester. One lecture and three hours drafting. Graphical statics, beams and trusses, building materials, foundations; calculations relating to machine parts, transmission of power by bands, riveted joints, etc.; elementary design of mine buildings, trestles, ore bins, headframes, etc. Grider.

57.—MINE ADMINISTRATION. One hour credit. Second semester. Business management, mine accounts and cost sheets. Mine accidents, care of sick and injured. Sanitation of camps. Terrill.

58.—ORE DRESSING II. Four hours credit. Second semester. Two lectures and six hours laboratory. Fine crushing and screening machinery, sand and slime concentration, flotation, stamp milling, amalgamation, cyanidation, classification, regrinding, mill sampling, miscellaneous processes of separation, and accessory apparatus. Required of students in metal mining. Terrill.

59.—MINE EXAMINATION AND REPORTS. One hour credit. Second semester, three hours by appointment. Sampling tools; sampling fissure veins, coal seams, placer deposits, tailings, mill products, gases, liquids, etc.; preparing samples for the assayer; recording assays, assay maps and surveys; underground, milling and metallurgical losses; estimating tonnage; mine examination and camp equipment; writing reports. Grider.

60.—PROFESSIONAL THESIS. Two hours credit. This may be description of a mining or metallurgical plant, or of a mining district, or may be work done in connection with course 63, or 65, or may be founded upon research work done at the University. Terrill and Grider.

61.—COAL MINING I. Two hours credit. First semester, Tu. Th., at 11:30. Methods of working coal beds and handling coal. Properties of mine gases, safety lamps, explosives, ventilation, causes and prevention of explosions. Terrill.

62.—COAL MINING II. Three hours credit. Second semester, M. W. F., at 9:30. Systems and methods of working coal, extraction, haulage, hoisting, coal-cutting tools, coal-cutting machinery, excavating machinery, mine cars and tracks, etc.; surface plants. Prerequisite, mining engineering 1 and 61. Terrill.

63.—MINE PLANT AND MILL DESIGN II. Three hours credit. Second semester, 1 lecture and 6 hours drafting. Optional for Senior and graduate students. Advanced course in design, construction and installation of mine plants, concentrating mills, machinery, headframes, ore bins, dams, fans, foundations, tramways, flumes, sluices and pressure boxes. Preparation of working drawings, bills of materials, specifications and estimates. Prerequisite, mining engineering 56. Grider.

64.—MINING ENGINEERING. Three hours credit. First semester. The economic importance of geological irregularities affecting mine operations, of mine maps in following the ore, of choosing methods and locating openings, and of conditions affecting cost and production of the metals and nonmetals. Grider.

65.—SUMMER WORK. Each candidate for a degree is required to give evidence of having had experience in some phase of mining work. This may be gained by an investigation of some mining district under the direction of an instructor for a period of six weeks, or by employment in mining work.

66.—ADVANCED ORE DRESSING III. Four hours credit. Second semester, Senior or graduate students. One lecture and 9 hours laboratory work, optional. Principles and schemes of mill processes. Adapting processes to specific ores, each student to choose one of the following for special study: flotation or other concentration method; amalgamation; cyanidation; chlorination; chloridizing roast; or lixiviation methods. Grider.

67.—MINERAL AND PUBLIC LAND SURVEYING. Three hours credit. First semester, Senior and graduate students. Two lectures and one afternoon. (a) Mineral land surveying; mining claims, timber, coal and stone lands; dam, mill, tunnel, and reservoir sites; ditch, flume, and pipe lines; preparation and filing legal documents; duties of United States deputy mineral surveyors. (b) Subdividing public lands, locating, relocating, and marking corners, making plats, reports, etc. Prerequisite, civil engineering 1 and 2. Grider.

PHYSICAL EDUCATION.

Professor NAISMITH.
Mr. LORENZ, Instructor.

FRESHMAN 1. First half-semester, soccer, football, elementary gymnastics, and track work; second half-semester, basketball, tumbling, apparatus work, swimming.

FRESHMAN 2. First half-semester, apparatus work, swimming, diving, etc.; second half-semester, track athletics, high jump, etc., or lacrosse.

Freshman are required to attend classes three periods per week. Special classes are organized for engineers at such times as the majority can attend.

Additional courses will be arranged for special work and for the prescribed work which can not be done in class.

Every student may receive a thorough medical and physical examination, with the results platted on a chart. When needed, special exercises will be prescribed.

Every student who uses the gymnasium, or who is a candidate for any University team, must pass a satisfactory medical and physical examination.

PHYSICS.

Professor KESTER.
Associate Professor RICE (M. E.).
Assistant Professor STIMPSON.
Assistant Professor SMITH (T. T.).
Mr. WHITTEMORE, Instructor.

1E.—GENERAL PHYSICS. Five hours credit. First semester, four recitations at 11:30; two hours laboratory at assigned periods; second semester, four recitations at 10:30, two hours laboratory at assigned periods. A fundamental course of experimental lectures, recitations, and problems. Prerequisites, plane trigonometry and some knowledge of analytical geometry and calculus. First semester, M. E. Rice and other instructors; second semester, T. T. Smith and other instructors.

2E.—GENERAL PHYSICS. Five hours credit. Second semester, four recitations, at 11:30, two hours laboratory at assigned periods; first semester, four recitations, at 10:30, two hours laboratory at assigned periods. A continuation of course 1E. Second semester, M. E. Rice and other instructors; first semester, T. T. Smith and other instructors.

52.—THEORY OF ELECTRICITY AND MAGNETISM. Three hours credit. First semester, M. W. F., at 11:30. M. E. Rice.

60E.—ELECTRICAL MEASUREMENTS I. One and one-half hours credit. First semester, three hours per week. M. Tu. of alternate weeks, 1:30 to 3:30. A laboratory course coördinate with 52. M. E. Rice.

61E.—ELECTRICAL MEASUREMENTS II. One and one-half hours credit. Second semester, three hours; M. Tu. of alternate weeks, at 1:30 to 3:30. Continuation of course 60E. M. E. Rice.

For other courses in physics, see The College and The Graduate School.

ROMANCE LANGUAGES.

Assistant Professor WINTER.
Miss GARDNER, Instructor.

FRENCH.

1.—ELEMENTARY FRENCH I. Five hours credit. First semester, at 10:30. Grammar (Fraser and Squair), and easy reading. Drill in pronunciation, accent, and easy syntax. Gardner.

2.—ELEMENTARY FRENCH II. Five hours credit. Second semester, at 10:30. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. Gardner.

(Instead of taking course 3, engineering students should take course 5. Those wishing course 4 may take it either semester in the College.)

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, at 11:30. Translation of some scientific text. Reading and reports of current French scientific and technical periodicals. The aim of this course is to give the students a reading knowledge of the French language of science for practical use in research work. Prerequisites, courses 1 and 2. Gardner.

SPANISH.

1.—ELEMENTARY SPANISH I. Five hours credit. First semester, five hours, 8:30, 9:30, 1:30; also second semester, five hours, at 1:30. An outline of grammar (Olmsted and Gordon). Reading of short stories. Elementary composition. Winter and Gardner.

2.—ELEMENTARY SPANISH II. Five hours credit. Second semester, five hours, 9:30 or 1:30. Grammar and composition. Reading of easy modern prose. Carrión-Aza, Pérez Galdós, Ibáñez, etc. Winter and Gardner.

For advanced courses in Spanish, see The College.

TECHNICAL REPORTS AND THESES.

Special written reports are required from each student at certain times during his course of study, generally one in each semester of the Sophomore year, one in the Junior year, and one in the Senior year. A student enrolled for technical report I, II, III, or IV confers with his instructor for assignment of the subject on or before October 15 for the first semester, and on or before March 15 for the second semester. The finished reports must be in the instructors' hands by January 15 and May 15 of the respective semesters. Each report counts for one-half credit.

A special thesis is required of each student before his graduation. (See "Thesis" in the description of courses of the professional departments.)

Standard forms for the make-up of technical reports, theses, and other written papers are specified in an official circular to be had at the Dean's office.

SUMMER WORK.

In several of the courses of study practical work in one or two summers is required. This work is not measured in terms of credit hours, although in fixing the requirements for graduation one or two additional credit hours are required in those courses of study which do not include summer work.

INSPECTION TRIPS.

As a valuable adjunct to resident study at the University, inspection trips to various engineering works are required to be taken by students with their instructors. Such trips may be made to large machine shops, power plants, steam or electric railways, lighting systems, city waterworks, sewerage systems, industrial chemical plants, cement works, mining plants, or smelters. Architectural-engineering students are expected to visit important buildings in course of construction. These trips may be made during regular sessions of the school or during vacation. Parties sometimes travel as far as Chicago or St. Louis. The trips requiring absence from other work and those of considerable expense are indicated in the programs of required courses of study.

ENGINEERING EXPERIMENT STATION.

STATION STAFF.

FRANK STRONG, Ph. D., President.
P. F. WALKER, M. M. E. (Director), Mechanical Engineering.
GEORGE C. SHAAD, E. E., Electrical Engineering.
HERBERT A. RICE, C. E., Mechanics and Civil Engineering.
GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
A. C. TERRILL, E. M., Mining Engineering.
W. A. WHITKAER, A. M., Chemical Engineering.

PURPOSES.

This department of University activity has been established for two reasons: first, to correlate and group together in a more systematic way the results of scientific investigation that heretofore has been done under the various departments; second, to foster, enlarge, and direct this work, especially along lines of value to this state, and to supervise the publication and distribution of the results of engineering and industrial research work.

The work completed and published up to the present time has been done mainly by members of the teaching staff. It is described in detail in Section XII of the complete Catalog. Lists of all publications and of those soon to be issued are given. All communications relative to the Station and its work should be addressed to the Director.



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

SCHOOL OF FINE ARTS

SECTION V

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

FACULTY.

- FRANK STRONG, Ph. D., Chancellor of the University, and President of the Faculties.
- HAROLD L. BUTLER, A. B., Dean of the School of Fine Arts, and Professor of Voice.
- CARL A. PREYER, Mus. D., Associate Dean of the School of Fine Arts, and Professor of Piano, and Composition.
- CHARLES SANFORD SKILTON, A. B., Professor of Organ, History of Music, and Theory.
- ARTHUR NEVIN, Professor of Choral Music, Ensemble, and Music Extension.
- WILLIAM BELL DOWNING, Professor of Voice.
- WORT S. MORSE, B. S., Professor of Violin.
- WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.
- CHARLES GRAHAM DUNLAP, Litt. D., Professor of English Literature.
- EDWIN MORTIMER HOPKINS, Ph. D., Professor of Rhetoric and English Language.
- EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
- JAMES NAISMITH, M. D., Professor of Physical Education.
- FREDERICK EDWARD KESTER, Ph. D., Professor of Physics.
- RAPHAEL DORMAN O'LEARY, A. B., Professor of Rhetoric.
- ELMER FRANKLIN ENGEL, A. M., Professor of German.
- JOSEPH A. FARRELL, Associate Professor of Voice.
- SELDON LINCOLN WHITCOMB, A. M., Associate Professor of English Literature.
- ELISE NEUENSCHWANDER, Ph. D., Associate Professor of French.
- LOUIS EUGENE SISSON, A. M., Associate Professor of Rhetoric.
- WILLIAM SAVAGE JOHNSON, Ph. D., Associate Professor of English Literature.
- ALBERTA LINTON CORBIN, Ph. D., Associate Professor of German.
- HARRIET GREISSINGER, Mus. B., Assistant Professor of Piano.
- ANNA SWEENEY, Mus. B., Assistant Professor of Piano.
- WILLIAM P. WARD, A. B., Assistant Professor of Italian.
- MAUD MILLER, Mus. B., Instructor in Piano.
- PEARL AGNES EMLEY, Mus. M., Instructor in Piano and Organ.
- CORA IRENE REYNOLDS, Mus. B., Instructor in Voice.
- WILLIAM B. DALTON, Instructor in Cello.
- MARIA L. BENSON, A. B., Instructor in Design.
- J. C. MCCANLES, Instructor in Band Instruments.

School of Fine Arts.

DEPARTMENTS.

The School of Fine Arts is made up of the following departments:
(1) Music; (2) Drawing and Painting.

EQUIPMENT.

IN MUSIC. The department of music of the University occupies a separate building, North College. The school is well equipped with pianos—Knabe concert grands exclusively are used. It has a three-manual pipe organ, built by King & Sons, Elmira, N. Y.; a piano with organ pedals; charts for sight-reading, and a Victrola with several hundred music records.

IN DRAWING AND PAINTING. The department of drawing and painting occupies specially constructed rooms in the new Administration Building. There are six large, top-lighted studios, together with storerooms, locker rooms and toilet rooms. The department is well equipped with objects used in teaching drawing and design, together with a large library.

THE LIBRARY. The University Library contains a large collection of works on art, including art exposition and criticism; full sets of the classic and modern dramatic works, with many books on dramatic art and criticisms; a large collection of vocal and orchestral scores of operas, oratorios and cantatas, biography, music history and criticisms, symphonies and overtures, chamber music, ensemble music, pianoforte and organ music. These collections are annually increased. In addition each department has its departmental library, where students can gain instant access to the works needed.

THE FACULTY.

The professional faculty of the School of Fine Arts is made up of instructors who have had the advantages of the finest training to be secured in this country, and, in addition, many of them have had extended European training. Each one has had a large experience before the public—in concert, opera, oratorio, in dramatic work—and is able to give practical advice to his students in these matters. No instructor with less than five years' teaching experience is engaged for the faculty, so that the students may be sure that they are in the hands of thoroughly experienced teachers. Many members of the faculty are authors, composers and artists of rank and merit, their works having been printed by representative publishing houses. Each instructor is a specialist in his particular work, and represents the best thought and method of modern pedagogy along that line.

COURSES AND DEGREES.

The courses of study in the School of Fine Arts leading to degrees are as follows:

Four-year courses in piano, voice, violin, organ, and composition, leading to the degree bachelor of music.

A four-year course in drawing and painting, leading to the degree bachelor of painting.

Courses Leading to an Artist's Certificate.

Four-year courses in voice, piano, organ, violin, and drawing and painting, leading to an artist's certificate in these subjects.

Courses Leading to a Teacher's Certificate.

Three-year courses in voice, piano, organ, violin, and drawing and painting, leading to a teacher's certificate in these subjects.

Two-year course in public-school music, leading to a teacher's certificate in public-school music.

Two-year course in public-school drawing and painting, leading to a certificate in public-school drawing and painting.

ADMISSION.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

1. By Examination.

All students who can not present certificates from accredited schools will be examined in the subjects required for entrance. The times and place of examination are set forth in the General Information section.

2. By Certificate.

Students will be admitted without examination on certificates from accredited high schools, or other preparatory schools, signed by the proper school officer.

Units Required for Admission.

For admission to the four-year courses leading to degrees in drawing and painting, and in voice, the requirements are the same as for admission to the College, viz.: fifteen units of high-school work.

For admission to the courses in violin and in piano and organ, twelve units of high-school work are required, and should consist of:

Three units of English.

Two and one-half units in mathematics.

Three units in foreign language.

One unit in physical science.

Two and one-half optional units.

IN PIANO AND ORGAN. The following courses, intended to parallel the four years of high-school study, must be completed before admission to the Freshman year. Students who have nearly completed the course will be admitted with condition on recommendation of the head of the department. An examination in fourth-year work is required. While the School of Fine Arts prefers this course of study, students who have been prepared with Lambert's or Mathews' Graded Studies, Mason's Touch and Technic, or other recognized methods, may offer them as a substitute.

FIRST YEAR—

STUDIES.

Loeschhorn, Op. 65, Books I and II.

Burgmuller, Op. 100.

Koehler, Op. 50.

Duvernoy, Op. 276.

PIECES.

Selections from "The Pianist's First and Second Years" (Schirmer), and pieces by Biedermann, Dennee, Bohm, and others.

SECOND YEAR—

Loeschhorn, Op. 65, Book III.

Heller, Op. 47.

Lemoine, Op. 37.

Concone, Op. 24.

Selections from "The Pianist's First and Second Years" (Schirmer), and pieces by Gurliitt, Lichner, Von Wilm, and others.

THIRD YEAR—

Loeschhorn, Op. 66, Book I.

Heller, Op. 47.

Czerny, Op. 849.

E. B. Perry, Wrist Studies.

"Five Lyrical Pieces."

Selections from "The Pianist's Second and Third Years" (Schirmer), and pieces by Reinecke, Merkel, Schytte, and others. Sonatas of Clementi, Kuhlau, Beethoven, Op. 49.

FOURTH YEAR—

Loeschhorn, Op. 66, Books II and III.
Heller, Op. 46.
Czerny, Op. 299, Books I and II.
Preyer, Twelve Wrist Studies.

Haydn Sonatas in C major or E minor;
Mozart Sonatas in C major or G minor;
Beethoven, Op. 79; Grieg, Lyrical Pieces,
Op. 12; Schumann, Album for the Young;
pieces by Meyer-Helmund, Jensen, Dupont,
and others.

IN VIOLIN.

FIRST YEAR—

STUDIES.

Schubert's Violin Method, Books 1
and 2.
Sevcik, School of Violin Technic, Op.
1, Part 1.

PIECES.

Jul. Weiss, Harvest of Flowers, Books 1
and 2.
Philip Mittell, Twenty-nine Pieces, Vol. 1.
Pleyel, Duets, Op. 8.
Goby Eberhardt, School of Melody, Book 1.

SECOND YEAR—

Schubert's Violin Method, Books 2
and 3.
Sevcik, School of Violin Technic, Op.
1, Part 1, continued.
Sevcik, Shifting the Position, Op. 8.
Kayser, Studies, Book 2.

Goby Eberhardt, School of Melody, Book 2.
Twelve Little Duets, Mazas.
Easy Solos employing the first five positions,
by Dancla, DeBeriot, Wieniawski, Bohm,
Hauser, Reis and others.

THIRD AND FOURTH YEARS—

Kayser, Studies, Book 3.
Sevcik, Shifting the Position, Op. 8.
Sevcik, Exercises in Double Stopping,
Op. 9.
Schradeck, Scale Studies.

Dancla, Six Airs, Op. 118.
Dancla, Three Little Symphonies, for two
violins and piano.
Sonatas by Dancla, Wohlfahrt and others.
Concertos by Seitz, Accolay and others.
Solos employing the first seven positions, by
Dancla, Bohm, Haesche, Pierne and others.

Other violin methods may be substituted for the Schubert, according to the teacher's experience.

Owing to the fact that students are generally out of practice during the summer, entrance examinations in the above work can be taken any time up to October 1. Students intending to enter should write the Dean of the School of Fine Arts about September 1, signifying such intention and arranging for interviews with the heads of the various departments.

Four-year Artists' Certificate Course.

These courses are designed to accommodate those students who are unable to meet the scholastic requirements of the regular courses in piano, voice, violin, organ, or drawing and painting; or those who do not wish to carry the studies in the College which are required of students in the regular courses; or those who wish to specialize with the idea of fitting themselves as teachers of the various subjects.

There are no entrance requirements except the requirements in music, which are the same as for the regular courses. The courses are the same as for the four years of the regular course, omitting the studies in the College.

Three-year Teachers' Certificate Course.

These courses are the same as the first three years of the artists' certificate courses, with the same entrance requirements, and with the same studies. These courses are designed to accommodate those who are able to spend but three years at the school.

Two-year Teachers' Certificate Courses.

These courses are designed to fit students as teachers of music, and drawing and painting in the grades and high schools of the state. The requirements for entrance are the same as for the College, viz.: fifteen units of high-school work.

For details of all these courses see the Curriculum in this catalog.

For courses leading to the degree master of music see the Graduate Catalog.

Special Students.

Students need not be deterred from seeking to enter the School of Fine Arts of the University because they can not satisfy all the requirements for full admission to that school. Those requirements are for persons who are candidates for a degree in music or painting. All persons who desire to pursue a special line of work, without conforming to the requirements for entrance or following a prescribed course, may apply for admission to the School of Fine Arts as special students. The admission of such persons is under the control of the Dean, to whom they should apply, and whose certificate of acceptance must be presented to the Registrar before registration.

Special students desiring credit toward a degree or a certificate are subject to the same regulations as regular students as to the quality of work, attendance at recitals and examinations. Nonresident special students who are not regularly enrolled in some other school of the University will be expected to carry not less than ten hours' work, of which there must be two hours of theory.

REGISTRATION.

All candidates for admission having certificates from accredited schools, and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 11, 12 or 13. Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 12 and 13, and on the first day of the second semester. Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

GENERAL.

It is required of all candidates for a degree that the last two years be spent in residence at the University. Students who are behind in their major study at the end of the second year will become special students until the work is made up.

This school does not furnish pianos for practice at the building, except a piano with organ pedals, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private persons, or in connection with board, may often be secured at even lower rates. Several students sometimes unite in renting an instrument, thus materially reducing the expense.

CONCERTS AND RECITALS.

Concerts are frequently given in Recital Hall and in University Hall by the Faculty and advanced students. Concert courses which are arranged for at the University, and the nearness of Lawrence to Kansas City and Topeka afford students an opportunity to hear many noted musicians.

Recitals are given fortnightly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and friends. Every student is required to attend these recitals and all concerts, and take part in the programs at least twice a

year, and to present each term a record of attendance. These semipublic appearances are of great assistance in enabling the student to acquire the ease and self-possession so essential to a successful public performance.

The concert course of the present year consisted of the following attractions: Madame Frances Alda, soprano; Zoellner String Quartet; Frank LaForge, pianist; Oscar Seagle, baritone; Harold Bauer, pianist; Arthur Shattuck, pianist; the Minneapolis Symphony Orchestra, with four vocal soloists, for two concerts.

ART EXHIBITIONS.

An annual exhibition of works of art is held at the University, together with a course of lectures upon subjects related to the fine arts. At the close of the year there is held an exhibition of work done by pupils of the department of drawing and painting.

CHORAL UNION.

The Choral Union, a chorus of 200 voices, Professor Arthur Nevin, conductor, is supported wholly by the University, although many townspeople are members. Only the finest choral works are studied, and two concerts are given annually. Weekly rehearsals are held in the high-school auditorium. This work is of great value to all music students, as during the four years of the College course thorough knowledge of at least eight great choral works is gained. In addition, the Choral Club rehearses and performs a number of fine miscellaneous choruses.

UNIVERSITY ORCHESTRA.

The University supports an orchestra, made up of students and talented amateur musicians from the city. Weekly rehearsals are held and an annual concert given. The orchestra is also used in the performance of concertos for the various solo instruments.

UNIVERSITY BAND.

The University Band of 70 pieces is made up wholly of University students. It rehearses weekly and gives two annual concerts. This is one of the finest college bands in the country.

GLEE CLUB.

A Men's Glee Club and a Women's Glee Club conducted by the Director of the vocal department give opportunity for the study and performance of the standard and lighter compositions for men's and women's voices. Each club gives an annual concert, and the Men's Glee Club makes a trip during the holidays.

ENSEMBLE.

Ensemble classes meet throughout the four years of the course for the study of concerted music. The first year four- and eight-hand music is studied in the piano course; in the violin and vocal courses duos and trios are studied; the second year the study of accompanying is taken up; and in the third and fourth years string trios, quartets, and quintets are studied. Ensemble playing and singing is one of the features of the student and faculty concerts.

MUSIC HISTORY.

The School of Fine Arts course in Music History, one hour for the Sophomore year and two hours for the Junior year, is one of the most thorough in the country. One of the features of the course is the great

mass of illustrative material used, by which the student hears the music performed and has ample opportunity of studying it from the tonal standpoint.

EAR TRAINING AND DICTATION.

This is a course which is poorly taught in even the largest schools of the country, and at the same time one most necessary for the full development of the modern music student. It is a feature of the School of Fine Arts music course, and is required of all Freshman students in the regular courses. Advanced students are advised to repeat it until proficient.

Melodic and rhythmic dictation within the key; triads in all positions; triads in key relations, major and minor; dominant sept chord; two-part melodic dictation; simple modulations to the sept chords; chromatic and passing tones; chords.

EXPENSES.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering any of the regular courses of the School of Fine Arts. Nonresidents of Kansas must pay a matriculation fee of ten dollars. This matriculation fee is not charged students who enter as special students only.

The instructors in the School of Fine Arts receive compensation from the state for only part of the work of the courses, and the remainder must be paid for at rates indicated below.

No fees will be refunded if the student leaves before the end of a half-term. No lessons are given during the week of the semiannual examinations. Seniors of the music department pay \$1 per quarter, concert fee.

The following rates are for the quarter, and with the exception of the work in the public-school music, drawing and painting, are based on two half-hour private lessons a week in the major study.

All bills are payable quarterly in advance, and enrollment in classes will be permitted only upon the presentation of the treasurer's receipt for the quarter's tuition.

Rates for Regular Students.

| | | |
|-----------------|---|---------|
| First year.... | Piano, per quarter, lessons with assistants..... | \$27.50 |
| | Voice, per quarter, lessons with Miss Reynolds.. | 27.50 |
| | Voice, per quarter, with other teachers..... | 33.50 |
| | Violin, per quarter..... | 27.50 |
| | Drawing and painting, per quarter..... | 15.00 |
| | Public-school music in class..... | 15.00 |
| | (Private lessons are subject to fees.) | |
| Second year.... | Rates the same as for the first year. | |
| Third year.... | Piano, per quarter: | |
| | Artists' course (two lessons with Prof. Preyer), | 40.00 |
| | Collegiate course (one with Prof. Preyer and | |
| | one with an assistant)..... | 33.50 |
| | Organ, per quarter..... | 33.50 |
| | Voice, per quarter..... | 33.50 |
| | Violin, per quarter..... | 33.50 |
| | Painting, per quarter..... | 15.00 |
| Fourth year.. | All courses leading to degrees, free to Kansas students. | |
| | For nonresidents the same as for the third year. | |
| | For all certificate courses the same as for the third year. | |

Rates for Special Students.

| | |
|--|---------|
| Piano with Prof. Preyer, two a week..... | \$36.00 |
| Piano with Prof. Preyer, one a week..... | 20.00 |
| Piano with Miss Greissinger, Miss Sweeney, or Miss Emley, two a week | 21.00 |
| Piano with Miss Greissinger, Miss Sweeney, or Miss Emley, one a week | 11.00 |
| Piano with Miss Miller, two a week..... | 17.00 |
| Piano with Miss Miller, one a week..... | 9.00 |
| Voice with Dean Butler, Prof. Downing, or Prof. Farrell, two a week | 36.00 |
| Voice with Dean Butler, Prof. Downing, or Prof. Farrell, one a week | 20.00 |
| Voice with Miss Reynolds, two a week..... | 19.00 |
| Voice with Miss Reynolds, one a week..... | 10.00 |
| Organ with Prof. Skilton, two a week..... | 36.00 |
| Organ with Prof. Skilton, one a week | 20.00 |
| Organ with Miss Emley, two a week..... | 21.00 |
| Organ with Miss Emley, one a week..... | 11.00 |
| Violin with Prof. Morse, two a week..... | 30.00 |
| Violin with Prof. Morse, one a week..... | 17.50 |
| Harmony, counterpoint, composition, instrumentation, with Pro- fessor Preyer, or Professor Skilton, two a week..... | 36.00 |
| Harmony, counterpoint, composition, instrumentation, with Pro- fessor Preyer, or Professor Skilton, one a week..... | 20.00 |
| In class (two a week)..... | 10.00 |
| Technic, in class..... | 5.00 |
| Public-school music course in class..... | 15.00 |
| (Private lessons subject to special fees.) | |
| Drawing and painting in class..... | 15.00 |
| Public-school drawing and painting in class..... | 15.00 |
| Teaching materials (with practice teaching)..... | 3.00 |
| Sight singing, ear training and dictation, two a week in class.... | 5.00 |
| Ensemble in class | 3.00 |
| Sight singing, ear training and dictation are free when taken in the regular courses. | |

THE CURRICULUM.

PIANOFORTE.

Leading to the Degree of Bachelor of Music.

ARTISTS' COURSE—COLLEGIATE COURSE.

These courses are identical in outline, but students in the artists' course are expected to do a larger amount of work, to maintain the highest grade in all musical subjects, and give a graduating recital. This is not required in the collegiate course, which is intended for those who wish to fit themselves for teachers or to take music for personal culture rather than to become public performers. After the second year students are graded in the two courses according to their standing. During the first two years piano students take their lessons from an assistant. Exceptions are sometimes made when students are willing to pay the Junior tuition rate, and Professor Preyer has time to accommodate them. In the third and fourth years, students in the artists' course receive two lessons a week of Professor Preyer; students in the collegiate course receive one lesson of Professor Preyer and one of an assistant.

FRESHMAN YEAR.

First Semester:

Piano 1, twice a week, by appointment. Assistants.
 Technic (Piano 9), once a week, by appointment. Miller.
 Ear Training and Sight Singing 1, Tuesday and Thursday, at 1:30.
 Downing.
 Harmony (Musical Theory 1), Tuesday and Thursday, at 2. Skilton.
 Rhetoric 1, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 Physical Education 1, twice a week, by appointment.
 Recitals and Ensemble Playing 1.

Second Semester:

Piano 2, twice a week, by appointment. Assistants.
 Technic (Piano 10), Wednesday, at 3. Miller.
 Ear Training and Sight Singing 2, Tuesday and Thursday, at 1:30.
 Downing.
 Harmony (Musical Theory 2), Tuesday and Thursday, at 2. Skilton.
 Harmony (Musical Theory 1), Monday, Wednesday, and Friday, at 2. Skilton.
 Rhetoric 2, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 Physical Education 2, twice a week, by appointment.
 Recitals and Ensemble Playing 2.

SOPHOMORE YEAR.

First Semester:

Piano 3, twice a week, by appointment. Assistants.
 Technic (Piano 11), once a week, by appointment. Miller.
 Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.
 Harmony (Musical Theory 2 and 3), Monday, Wednesday and Friday, at 2. Skilton.
 English 10, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 History of Music, Thursday, at 4. Skilton.

Recitals and Ensemble Playing 3.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1, by appointment. Downing, Farrell, and Reynolds.
Free-hand Drawing. Griffith.

German 1, daily, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30. Engel and assistants.

French 1, daily, at 8:30, 9:30, 10:30, 11:30, 1:30.

Italian 1, three hours, at 11:30.

Spanish 1, five hours, at 9:30, 11:30, 1:30.

Second Semester:

Piano 4, twice a week, by appointment. Assistants.

Technic (Piano 12), once a week, by appointment. Miller.

Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.

English 11, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.

History of Music, Thursday, at 4. Skilton.

Recitals and Ensemble Playing 4.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1, by appointment. Downing, Farrell, and Reynolds.
Free-hand Drawing. Griffith.

German 2, daily, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30.

French 2, daily, at 8:30, 9:30, 10:30, 11:30, 1:30.

Italian 2, three hours, at 11:30.

Spanish 2, five hours, at 9:30, 1:30.

Teaching Materials, once a week, by appointment. Greissinger.

JUNIOR YEAR.*First Semester:*

Piano 5, twice a week, by appointment. Preyer.

Counterpoint (Musical Theory 5), Monday, at 3. Preyer.

Composition (Musical Theory 7), Thursday, at 3. Skilton.

History of Music, Tuesday and Thursday. Skilton.

English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8:30, 9:30, 10:30, 1:30. Two-hour divisions at 10:30 and 11:30.

Recitals 5.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. Downing, Farrell, or Reynolds.

Drawing and Painting. Griffith.

German 1 or 3, daily.

French 1 or 3, daily.

Italian and Spanish as in Sophomore year.

Second Semester:

Piano 6, twice a week, by appointment. Preyer.

History of Music, Tuesday and Thursday. Skilton.

Counterpoint (Musical Theory 6), Monday, at 3. Preyer.

Composition (Musical Theory 8), Thursday, at 3. Skilton.

English 13 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 10:30 and 11:30. Two-hour divisions at 8:30, 9:30, 10:30, 1:30.

Acoustics, Monday and Wednesday, at 4:30, third half-term.

Recitals 6.

Thesis 1. Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. Downing, Farrell, or Reynolds.

Drawing and Painting. Griffith.
 German 2 or 4, daily.
 French 2 or 4, daily.
 Italian and Spanish as in Sophomore year.
 Teaching Materials, once a week, by appointment. Greissinger.

SENIOR YEAR.

First Semester:

Piano 7, twice a week, by appointment. Preyer.
 Canon and Fugue (Musical Theory 11), once a week, by appointment.
 Preyer.
 Recitals 7.
 Thesis 2. Skilton.
 Optional, English 50, 76, and 78. Other optionals as in previous years.
 Composition (Musical Theory 9), once a week, by appointment.
 Preyer.

Second Semester:

Piano 8, twice a week, by appointment. Preyer.
 Instrumentation (Musical Theory 12), once a week, Wednesday, at 3.
 Skilton.
 Thesis 3. Skilton.
 Recitals 8.
 Optional, English 77, 78, and 87. Other optionals as in previous years.
 Composition (Musical Theory 10), once a week, by appointment.
 Preyer.
 Teaching Materials, once a week, by appointment. Greissinger.

ORGAN.

Leading to the Degree of Bachelor of Music.

Three-year course, open to those who have completed the work of the Freshman year in piano.

SOPHOMORE YEAR.

First Semester:

Organ 1, once a week, by appointment. Skilton.
 Piano 3, once a week, by appointment. Assistant.
 Technic (Piano 11), once a week, by appointment. Miller.
 Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.
 English 10, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Ensemble Playing 3.
 One of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture, by appointment. Downing, Farrell, or Reynolds.
 Free-hand Drawing. Griffith.
 German 1, daily, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30.
 French 1, daily, at 8:30, 9:30, 10:30, 11:30, 1:30.
 Italian 1, three hours, at 1:30.
 Spanish 1, five hours, at 9:30, 11:30, 1:30.

Second Semester:

Organ 2, once a week, by appointment. Skilton.
 Piano 4, once a week, by appointment. Assistant.
 Technic (Piano 12), once a week, by appointment. Miller.
 Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.
 English 11, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.

History of Music, Thursday, at 4, Skilton.

Recitals and Ensemble Playing 4.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. Downing, Farrell, or Reynolds.

Free-hand Drawing. Griffith.

German 2, daily, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30.

French 2, daily, at 8:30, 9:30, 10:30, 11:30, 1:30.

Italian 2, three hours, at 1:30.

Spanish 2, five hours, at 9:30 or 1:30.

JUNIOR YEAR.

First Semester:

Organ 3, twice a week, by appointment. Skilton.

Counterpoint (Musical Theory 5), Monday, at 3. Preyer.

Composition (Musical Theory 7), Thursday, at 3. Skilton.

Organ 8, once a week, by appointment. Skilton.

History of Music, Tuesday and Thursday. Skilton.

English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8:30, 9:30, 10:30, 1:30. Two-hour divisions at 10:30 and 11:30.

Recital and Ensemble Playing 5.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. Downing, Farrell, or Reynolds.

German 1 or 3, daily.

French 1 or 3, daily.

Italian and Spanish as in Sophomore year.

Drawing and Painting 1 or 2. Griffith.

Second Semester:

Organ 4, twice a week, by appointment. Skilton.

Composition (Musical Theory 8), Thursday, at 3. Skilton.

Counterpoint (Musical Theory 6), Monday, at 3. Preyer.

Organ 9, once a week, by appointment. Skilton.

English 13 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 10:30 and 11:30. Two-hour divisions at 8:30, 9:30, 10:30, 1:30.

Acoustics, Monday and Wednesday, at 5:30, second half-term.

History of Music, Tuesday and Thursday. Skilton.

Recitals and Ensemble Playing 6.

Thesis 1. Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. Downing, Farrell, or Reynolds.

Drawing and Painting. Griffith.

German 2 or 4, daily.

French 2 or 4, daily.

Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Organ 5, twice a week, by appointment. Skilton.

Canon and Fugue (Musical Theory 11), Wednesday, at 11. Preyer.

Church Music 7, once a week. Skilton.

Recitals 7.

Thesis 2. Skilton.

Optionals, English 50, 76, and 78. Other optionals as in previous years.

Composition (Musical Theory 9), once a week, by appointment. Preyer.

Second Semester:

Organ 6, twice a week, by appointment. Skilton.

Instrumentation (Musical Theory 12), Wednesday, at 3. Skilton.

Recitals 8.

Thesis 3. Skilton.

Optionals, English 77, 78, and 87. Other optionals as in previous years.

Composition (Musical Theory 10), once a week, by appointment. Preyer.

VIOLIN.

Leading to the Degree of Bachelor of Music.

These courses are the same as the four-year course in piano, except that violin 1 to 8 take the place of piano 1 to 8, and orchestra 1 to 8 that of piano 9 to 12. Students must be able to play easy piano accompaniments or make up the deficiency by private lessons.

Violin students are required to play in the University Orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

VIOLONCELLO.

These courses are the same as the first two years of the course in piano, except that violoncello 1 to 4 take the place of piano 1 to 4, and orchestra 1 to 4 that of piano 9 to 12. Students must be able to play easy piano accompaniments or make up the deficiency by private lessons.

Violoncello students are required to play in the University Orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

VOCAL CULTURE.

Leading to the Degree of Bachelor of Music.

Students in the regular course in voice must be able to play accompaniments of moderate difficulty. Any deficiency in this respect must be made up by private lessons before entering the Senior year.

Voice students take their lessons with Dean Butler, Professor Downing, or Professor Farrell; also in the Freshman year with Miss Reynolds.

Voice students are urged to take German 1 and 2 in the Junior year, and French 1 and 2 in the Senior year.

FRESHMAN YEAR.*First Semester:*

Vocal Culture 1, twice a week, by appointment, Butler, Downing, Farrell, or Reynolds.

Ear Training and Sight Singing 1, Tuesday and Thursday, at 1:30. Downing.

Harmony (Music Theory 1), Tuesday and Thursday, at 2. Skilton.

Rhetoric 1, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.

Italian 1, three hours a week, at 11:30.

Physical Education 1, twice a week.

Recitals and Chorus Singing 1.

Second Semester:

Vocal Culture 2, twice a week, by appointment. Butler, Downing, Farrell, or Reynolds.

Ear Training and Sight Singing 2, Tuesday and Thursday, at 1:30.
 Downing.
 Harmony (Musical Theory 2), Tuesday and Thursday, at 2. Skilton.
 Harmony (Musical Theory 1), Monday, Wednesday and Friday, at 2.
 Skilton.
 Rhetoric 2, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30,
 3:30.
 Physical Education 2, twice a week.
 Recitals and Chorus Singing 2.
 Optional, Italian 2, three hours a week, at 11:30.

SOPHOMORE YEAR.

First Semester:

Vocal Culture 3, twice a week, by appointment. Butler, Downing, or
 Farrel.
 Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.
 English 10, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30,
 3:30.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Chorus Singing 3.
 One of the following optionals may be taken (private lessons are sub-
 ject to fees):
 Piano 1, twice a week. Preyer or assistants.
 Free-hand Drawing. Griffith.
 German 1, daily, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30.
 French 1, daily, at 8:30, 9:30, 10:30, 11:30, 1:30.
 Italian 1, three hours, at 11:30.
 Spanish 1, five hours, at 9:30, 11:30, 1:30.

Second Semester:

Vocal Culture 3, twice a week, by appointment. Butler, Downing, or
 Farrell.
 Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.
 English 11, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30,
 2:30, 3:30.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Chorus Singing 4.
 One of the following optionals may be taken (private lessons are
 subject to fees):
 Piano 1, twice a week, by appointment. Preyer or assistants.
 Free-hand Drawing. Griffith.
 German 2, daily, at 8:30, 9:30, 11:30, 2:30.
 French 2, daily, at 8:30, 9:30, 10:30, 11:30, 1:30.
 Italian 2, three hours, at 11:30.
 Spanish 2, five hours, at 9:30 or 1:30.

JUNIOR YEAR.

First Semester:

Vocal Culture 5, twice a week, by appointment, Butler, Downing, or
 Farrell.
 Counterpoint (Musical Theory 5), Monday, at 3. Preyer.
 Composition (Musical Theory 7), Thursday, at 3. Skilton.
 History of Music, Tuesday and Thursday. Skilton.
 Recitals and Chorus Singing 5.
 English 12 *a* and *b*. History of English Literature. Two or three
 hours. Three-hour divisions at 8:30, 9:30, 10:30, 11:30. Two-
 hour divisions at 10:30 and 11:30.
 One of the following optionals may be taken (private lessons are
 subject to fees):
 Piano 1 or 2, twice a week, by appointment. Preyer or assistants.
 Drawing and Painting. Griffith.

German 1 or 3, daily.
 French 1 or 3, daily.
 Italian and Spanish as in Sophomore year.

Second Semester:

Vocal Culture 6, twice a week, by appointment. Butler, Downing, or Farrell.
 Counterpoint (Musical Theory 6), Monday, at 3. Preyer.
 Composition (Musical Theory 8), Thursday, at 3. Skilton.
 Acoustics, three hours a week, by appointment.
 Recitals and Chorus Singing 6.
 History of Music, Tuesday and Thursday. Skilton.
 English 13 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 10:30 and 11:30. Two-hour divisions at 8:30, 9:30, 10:30, 1:30.
 Thesis 1. Skilton.
 One of the following optionals may be taken (private lessons are subject to fees):
 Piano 1 or 2, twice a week, by appointment. Preyer or assistants.
 Drawing and Painting. Griffith.
 German 2 or 4, daily.
 French 2 or 4, daily.
 Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Vocal Culture 7, twice a week, by appointment. Butler, Downing, or Farrell.
 Canon and Fugue (Musical Theory 11), Wednesday, at 11. Preyer.
 Recitals and Chorus Singing 7.
 Thesis 2. Skilton.
 Optionals, English 50, 76, and 78. Other optionals as in previous years.
 Composition (Musical Theory 9), once a week, by appointment.
 Preyer.

Second Semester:

Vocal Culture 8, twice a week, by appointment. Downing or Farrell.
 Recitals and Chorus Singing 8.
 Instrumentation (Musical Theory 12), Wednesday, at 3. Skilton.
 Opera, once a week. Downing.
 Thesis 3. Skilton.
 Optional, English 77, 78, and 87. Other optionals as in previous years.
 Composition (Musical Theory 9), by appointment. Preyer.

DRAWING AND PAINTING.

Leading to the degree of Bachelor of Painting.

Students in drawing and painting will be required to furnish their own materials, except easels and drawing boards.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

FRESHMAN YEAR.

First Semester:

Drawing 1, daily, 1:30 to 4:30. Griffith and Benson. (Five hours.)
 English 10, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 Rhetoric 1, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.

Drawing 17 (Perspective), Monday, Wednesday, and Friday, at 8:30. Griffith. (Two hours.)
 Drawing 18 (History of Modern Painting), Tuesday and Thursday, at 9:30. Griffith. (Two hours.)
 Physical Education, twice a week.

Second Semester:

Drawing 2 or 4, daily, at 1:30 to 4:30. Griffith and Benson. (Five hours.)
 Drawing 19 (Ornamental Design), Monday, Wednesday, and Friday, at 10:30. Benson. (Two hours.)
 English 11, three hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 Rhetoric 2, two hours a week, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30.
 Drawing 13 (Composition), Tuesday and Thursday at 9:30. Griffith. (Two hours.)
 Drawing 4 or 2 (Painting), daily, 1:30 to 4:30. Griffith. (Five hours.)
 Physical Education 2, twice a week.

SOPHOMORE YEAR.

First Semester:

Drawing 3 or 5, daily, 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 20 (Ornamental Design), Monday, Wednesday, and Friday, 10:30 to 12:30. Benson. (Three hours.)
 English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8:30, 9:30, 10:30, and 11:30. Two-hour divisions at 10:30 and 11:30.
 Drawing 5 or 3 (Painting), daily, 1:30 to 4:30. Griffith. (Five hours.)
 Optional: French 1 and 2, German 1 and 2, Italian 1 and 2, Spanish 1 and 2, Philosophy 1 and 2, Manual Arts (Drawing and Design 4), Zoölogy 1.

Second Semester:

Drawing 6 or 7, daily, 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 7 or 6 (Painting), 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 21, Monday, Wednesday, and Friday, 10:30. Benson. (Three hours.)
 Drawing 14, Tuesday and Thursday, at 9:30. Griffith. (Two hours.)
 English 13 *a* and *b*. History of English Literature. Two or Three hours. Three-hour divisions at 10:30 and 11:30. Two-hour divisions at 8:30, 9:30, 10:30, 1:30.
 Optional: French 1 and 2, German 1 and 2, Italian 1 and 2, Spanish 1 and 2, Philosophy 1 and 2, Botany 1.

JUNIOR YEAR.

First Semester:

Drawing 8 or 9 (Painting), daily, 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 9 or 8, daily, at 1:30. Griffith. (Five hours.)
 Drawing 22 (Ornamental Design), Monday, Wednesday, and Friday, 8:30 to 10:30. Benson. (Three hours.)
 Greek Architecture 61, two hours, at 11:30.
 English 50 (Narration and Description). Three hours, first semester, at 8:30 and 9:30.
 Optional: French 1 and 2 or 3 and 4, German 1 and 2 or 3 and 4, Spanish 1 and 2 or 3 and 4, Italian 1 and 2 or 3 and 4, English 71 and 72, Applied Design (Drawing and Design 7 and 8).

Second Semester:

Drawing 10, daily, 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 23, daily 8:30 to 10:30. Benson. (Five hours.)
 Drawing 15, Tuesday and Thursday, at 9:30. (Two hours.)
 Greek Sculpture and Painting 62. Three hours, at 11:30.
 English 51 (Narration and Description). Two hours, second semester,
 at 8:30 and 9:30.
 Optionals: Same as first semester.

SENIOR YEAR.

First Semester:

Drawing 11, daily, 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 24, five hours, by appointment. Benson. (Three hours.)
 Drawing 26 (History of Ornament), Tuesday and Thursday, at 10:30.
 (Two hours.)
 Optionals: Same as Junior year. (Three hours are required.)

Second Semester:

Drawing 12, daily, 1:30 to 4:30. Griffith. (Five hours.)
 Drawing 25, Three hours, by appointment. Benson. (Three hours.)
 Drawing 27, Tuesday and Thursday, at 10:30. (Two hours.)
 Drawing 16, Tuesday and Thursday, at 9:30. (Two hours.)
 Drawing 28 (Graduating Painting). (Three hours.)
 Optionals: Same as first semester.

PUBLIC SCHOOL MUSIC COURSE.

Leading to Teacher's Certificate in Public-school Music.

Professor DOWNING.

The course in public-school music is designed to prepare students to become teachers and supervisors of music in grade and high schools. Only the best modern methods are employed, and the training is so closely graded that, at the end of the course, the student has prepared full courses of music study for all grades, beginning with the kindergarten and ending with the senior year of the high school. Actual teaching experience is gained by conducting classes in the Oread High School and by training classes of children. Special attention is given to correct methods of conducting.

At least one year of study in singing is required of students who prefer piano as a major. Ability to play the simpler compositions for piano or other instruments is required of students who take singing as a major.

Second-year students must attend the Lawrence Choral Union rehearsals if they are not members of a church choir.

Teachers with normal training or experience in public schools and some preparatory work in music may be able to complete the two-year course in one year. Credit is allowed for teaching experience or normal training in accredited schools.

A total of nine hours credit in the College and School of Education is required of candidates for certificates, as follows:

Methods of Teaching, three hours, second semester, Freshman year.

Elementary Education, three hours, second semester, Freshman year.

General Psychology, three hours, first semester, Sophomore year.

FRESHMAN YEAR.

First Semester:

Methods of Teaching Music in Elementary Schools 1, Monday and Thursday, at 8. Downing.
 Sight Singing 1, Tuesday, at 1, Downing.

Ear Training 1, Thursday, at 1. Downing.
 Harmony (Musical Theory 1), Tuesday and Thursday, at 2. Skilton.
 History of Music, Thursday, at 4. Skilton.
 Choral Practice 1.
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

Second Semester:

Methods of Teaching Music in Elementary Schools 2, Monday and Thursday, at 8. Downing.
 Sight Singing 2, Tuesday, at 1. Downing.
 Ear Training 2, Thursday, at 1. Downing.
 Harmony (Musical Theory 2), Tuesday and Thursday, at 2. Skilton.
 History of Music, Thursday. Skilton.
 Choral Practice 2.
 Methods of Teaching, three hours, at 10:30. (School of Education.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

SOPHOMORE YEAR.

First Semester:

Methods of Teaching Music in the Higher Grades and in the High Schools, Tuesday and Thursday, at 11. Downing.
 Practice Teaching, by appointment.
 Sight Singing 3, Tuesday, at 1. Downing.
 Ear Training 3, Thursday, at 1. Downing.
 Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.
 History of Music, Tuesday and Thursday. Skilton.
 Choral Practice 3.
 General Psychology, three hours, at 10:30 on Monday and Thursday, and third hour by appointment. (College.)
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)

Second Semester:

Methods of Teaching Music in High Schools, Tuesday and Thursday, at 11. Downing.
 Practice Teaching, by appointment.
 Sight Singing 4, Tuesday, at 1. Downing.
 Ear Training 4, Thursday, at 1. Downing.
 Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.
 History of Music, Tuesday and Thursday. Skilton.
 Instrumentation (Musical Theory 12), Wednesday, at 3. Skilton.
 Choral Practice 4.
 Voice or piano lessons by appointment.
 (Private lessons are subject to fees.)
 Elementary Education, three hours, at 8:30. (School of Education.)
 Optional: Folk dances, singing and dancing games, by appointment.
 Goetz.

DESCRIPTION OF COURSES.

The courses in English, French, Italian, German, Greek, physical education, and physics are given in the College. They are open to regular fine arts students, on application to the Dean of the School of Fine Arts, but students must also enroll with the Dean of the College.

DRAWING AND PAINTING.

Professor GRIFFITH.
Miss BENSON.

All courses are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

1.—FREE-HAND DRAWING. Free-hand drawing in charcoal from the cast and life. The method of instruction aims to teach the student to construct form in a simple and correct manner. Freshman, first semester, Monday, Wednesday, and Friday, 1:30 to 4:30.

2.—FREE-HAND DRAWING. Free-hand drawing in charcoal from the living model. Freshman, second semester, Monday, Wednesday, and Friday, 1:30 to 4:30.

3.—FREE-HAND DRAWING. A continuation of course 2. Sophomore, first semester, Monday, Wednesday, and Friday, 1:30 to 4:30.

4.—PAINTING. Painting with water color, oil or pastille from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshman, second semester, Tuesdays and Thursdays, 1:30 to 4:30.

5.—PAINTING. A continuation of course 4. Sophomore, first semester, Tuesday and Thursday, 1:30 to 4:30.

6.—PAINTING. Painting with water color, oil or pastille from life. Portrait painting is the object of the instruction in this class. Sophomore, second semester, Monday, Wednesday, and Friday, 1:30 to 4:30.

7.—PAINTING. Painting with water color, oil or pastille from landscape. Landscape painting is the object of this course. Sophomore, second semester, Tuesday and Thursday, 1:30 to 4:30.

8.—PAINTING. A continuation of course 6. Junior, first semester, Monday, Wednesday, and Friday, 1:30 to 4:30.

9.—PAINTING. A continuation of course 7. Junior, first semester, Tuesday and Thursday, 1:30 to 4:30.

10.—PAINTING. Painting in water color, oil or pastille from still life, the living model or landscape, as the student may elect. Junior, second semester, daily, from 1:30 to 4:30.

11.—PAINTING. A continuation of course 10. Senior, first semester, daily, from 1:30 to 4:30.

12.—PAINTING. A continuation of course 11. Senior, second semester, daily, 1:30 to 4:30.

13, 14, 15, and 16.—COMPOSITION. Throughout the entire course every student is required to study the compositions of the masters, and each week to make one original composition upon a given subject. Second semester, Tuesday and Thursday, at 9:30.

17.—PERSPECTIVE. Linear perspective and the geometrical problems of mechanical drawing. Freshman, first semester, Monday, Wednesday, and Friday, 8:30 to 9:30.

18.—HISTORY OF MODERN PAINTING. Freshman, first semester, Tuesday and Thursday, 9:30 to 10:30.

19.—ORNAMENTAL DESIGN. Harmony of line. The general principles of constructive and applied design are worked out in line harmonies. Freshman, second semester, Monday, Wednesday, and Friday, at 10:30.

20.—ORNAMENTAL DESIGN. Harmony of light and dark. The massing of light and dark is essential to successful work in design. Sophomore, first semester, Monday, Wednesday, and Friday, at 10:30.

21.—ORNAMENTAL DESIGN. Harmony of color. Harmonies of color are worked out by water-color rendering of original designs; also by embroidered silks on hand-woven linens. Sophomore, second semester, Monday and Friday, at 9:30.

22.—ORNAMENTAL DESIGN. The application of design. Constructive and applied design as applied for the production of ceramic art. Junior, first semester, three hours, by appointment.

23.—ORNAMENTAL DESIGN. The application of design. A continuation of course 22. Junior, second semester, three hours, by appointment.

24.—ORNAMENTAL DESIGN. The application of design. The application of design to the production of original work in various mediums for the arts and crafts. Senior, first semester, three hours, by appointment.

25.—ORNAMENTAL DESIGN. The application of design. A continuation of course 24, and the working out of a graduation piece in applied design. Senior, second semester, three hours, by appointment.

26.—HISTORY OF DESIGN. The general principles of historic ornament. Senior, first semester, Tuesday and Thursday, at 10:30.

27.—HISTORY OF DESIGN. A continuation of course 26, with special reference to the development of ceramic art. Senior, second semester, Tuesday and Thursday, at 10:30.

28.—GRADUATION PAINTING. Every student receiving a degree from the University must leave with the department an example of original work made during the Senior year, the studies and design for same to be approved by the head of the department before the end of the first semester.

ENGLISH LANGUAGE AND LITERATURE.

Professor DUNLAP.
 Professor HOPKINS.
 Associate Professor WHITCOMB.
 Associate Professor O'LEARY.
 Associate Professor JOHNSON.
 Associate Professor SISSON.
 Assistant Professor LYNN.
 Assistant Professor GRAY.
 Assistant Professor GARDNER.

1.—RHETORIC AND ENGLISH COMPOSITION. Three hours, first semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. Written and oral themes and exercises, with outlines of rhetorical theory. Required of all Freshmen in the School of Fine Arts. Gardner, and assistants.

2.—RHETORIC AND ENGLISH COMPOSITION. Two hours, second semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. A continuation of course 1. Required of all Freshmen in the School of Fine Arts. Gardner, and assistants.

10.—ENGLISH LITERATURE. Two hours, first semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. Class study of representative authors, with required library reading. Required in the first two years of the School of Fine Arts. Johnson, and assistants.

11.—ENGLISH LITERATURE. Three hours, second semester, at 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30. A continuation of course 10. Required in the first two years of the School of Fine Arts. Johnson, and assistants.

12 *a* and *b*.—HISTORY OF ENGLISH LITERATURE. Two or three hours, first semester. Three-hour divisions at 8:30, 9:30, 10:30, 1:30. Two-hour divisions at 10:30 and 11:30. Required for admission to courses 76, 77, 78, and 87. Required of all students in the School of Fine Arts. Gray, and assistants.

13 *a* and *b*.—HISTORY OF ENGLISH LITERATURE. Two or three hours, second semester. Three-hour divisions at 10:30 and 11:30. Two-hour divisions at 8:30, 9:30, 10:30, 1:30. A continuation of course 12. Required for admission to courses 76, 77, 78, and 87. Gray, and assistants.

50.—NARRATION AND DESCRIPTION. Three hours, first semester, at 8:30 and 9:30. A study of general principles, with exercises. O'Leary and Lynn.

51.—NARRATION AND DESCRIPTION. Two hours, second semester, at 8:30 and 9:30. A continuation of course 50. O'Leary and Lynn.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, first semester, at 11:30. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, De Quincey, Hazlitt, Newman, Landor, Ruskin, and Stevenson. Two hours of library work daily and preparation of two theses. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, second semester, at 9:30. Poetry. Biographical and critical lectures. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Two hours of library work daily and preparation of two theses. Dunlap.

78.—SHAKSPEARE. Three hours, both semesters, at 10:30. Lectures upon the life and times of Shakspeare. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Dunlap.

87.—THE ENGLISH NOVEL. Three hours, second semester, at 11:30. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Two hours of library work daily and preparation of two theses. Dunlap.

FRENCH.

Professor GALLOO.
Associate Professor NEUENSCHWANDER.
Assistant Professor WARD.
Assistant Professor COWPER.
Assistant Professor SKIDMORE.

1.—ELEMENTARY FRENCH I. Five hours, first semester, daily, at 8:30, 9:30, 10:30, 11:30, 1:30. Also given in the second semester, five hours, daily, at 9:30, 11:30, 2:30. Drill in pronunciation, accidence and elementary syntax. Prerequisites, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 8:30. NeuenSchwander, Ward, Cowper, Skidmore, Drake.

2.—ELEMENTARY FRENCH II. Five hours, second semester, daily, at 8:30, 9:30, 10:30, 11:30, 1:30. Also given in the first semester, five hours, daily, at 10:30, 2:30. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. NeuenSchwander, Ward, Cowper, Stanton.

3.—MODERN FRENCH PROSE. Three hours, both semesters, at 9:30 and 1:30. Translation and reading of some works of Mérimée, George Sand, Anatole France, and René Bazin. NeuenSchwander, Ward, Skidmore, Gardner, Stanton.

4.—COMPOSITION. Two hours, both semesters, at 9:30 and 1:30. Written exercises for grammatical review. Free composition. Oral exercises. Dictation. Cowper, Skidmore, Stanton.

GERMAN.

Professor ENGEL.
Associate Professor CORBIN.

1.—**GERMAN GRAMMAR.** Carruth's Otis's Grammar, with composition exercises. Carruth's Reader, about fifty pages. Five hours, first semester, daily, at 8:30, 9:30, 10:30, 1:30, 2:30; second semester, at 1:30. Engel, Corbin, and assistants.

2.—**GERMAN READER**, completed, and Schiller's Wilhelm Tell (complete). Also special exercises in word order and auxiliary verbs and sight reading. Second semester, daily, at 8:30, 9:30, 10:30, 1:30, and 3:30; first semester, at 9:30, 1:30, 2:30. Engel, Corbin, and assistants.

3.—**GERMAN PROSE.** Lessing's Minna v. Barnhelm, etc. Preceded by review of grammar. Sight reading. Five hours, first semester, daily, at 8:30, 9:30, 10:30, 2:30, 3:30; second semester, at 9:30, 2:30, 3:30. Engel, Corbin, and assistants.

4.—**SCHILLER'S WALLENSTEIN.** Five hours, second semester, daily, at 8:30, 9:30, 10:30, 2:30, 3:30; first semester, at 10:30 and 3:30. Engel, Corbin, and assistants.

GREEK.

Professor WILCOX.

61 and 62.—**HISTORY OF GREEK ART.** Lectures, recitations, private reading, writing of themes. First semester, two hours, at 2:30; second semester, three hours, at 11:30. Wilcox.

ITALIAN.

Professor GALLOO.
Assistant Professor WARD.

1.—**ELEMENTARY ITALIAN I.** Three hours, first semester, by appointment. Grammar. Reading, Marinoni's Reader. Ward and Stanton.

2.—**ELEMENTARY ITALIAN II.** Continuation of course 1. Three hours, second semester, by appointment. Grammar, composition, and reading of modern authors. Ward and Stanton.

MUSICAL THEORY.

Professor SKILTON.
Professor PREYER.

The following courses are required of all students in the regular music courses, excepting 9 and 10, which are optional:

1.—**HARMONY.** The study of overtones, scales, intervals, triads and seventh chords and their inversions. The practical work consists of harmonizing melodies in soprano or bass and playing chord progressions at the piano. Freshman, first semester, Tuesday and Thursday, at 2. Chadwick's Harmony used. Skilton.

2.—**HARMONY.** The study of close and open harmony, dominant ninth and diminished seventh chords, modulations. Practical work continued. Freshman, second semester, Tuesday and Thursday, at 2. Skilton.

3.—**HARMONY.** The study of modulation, irregular resolutions, altered chords, suspensions, passing tones, organ point, harmonization of florid melodies. Practical work continued. Sophomore, first semester, Tuesday and Friday, at 3. Skilton.

4.—**HARMONY.** Suspensions, passing tones, appoggiaturas, neighboring tones, organ point, harmonization of florid melodies, analysis. Practical work continued. Sophomore, second semester, Tuesday and Friday, at 3. Skilton.

5.—COUNTERPOINT. The different orders of single counterpoint in two, three and four parts. Junior, first semester, Monday, at 3. Preyer.

6.—COUNTERPOINT. Double and triple counterpoint; counterpoint in the twelfth and fifteenth and in more than four parts. Modern counterpoint. Junior, second semester, Monday, at 3. Preyer.

7.—MUSICAL COMPOSITION. The theme and variations, dance and song forms. Analysis of classical models, and practical work. Junior, first semester, Thursday, at 3. Skilton.

8.—MUSICAL COMPOSITION. The sonata and rondo forms; analysis of classical sonatas; original work. Junior, second semester, Thursday, at 3. Skilton.

9.—MUSICAL COMPOSITION. Original work in modern forms. Open only to those who show talent for composition. Senior, first semester, Wednesday, at 9. Preyer.

10.—MUSICAL COMPOSITION. Continuation of course 9. These two courses are open only to those who show talent for composition. Senior, second semester, Wednesday, at 3. Preyer.

11.—CANON AND FUGUE. The various forms of canon and their use in composition. The fugue and original work. Senior, first semester, Wednesday, at 3. Preyer.

12.—INSTRUMENTATION. The nature and treatment of the different instruments of the orchestra. The overture, symphony, cantata. Practical work for the University Orchestra. Senior, second semester, Wednesday, at 3. Skilton.

ORGAN.

Professor SKILTON.
Miss EMLEY.

1.—MANUAL AND PEDAL STUDIES. Merkel or Archer. Pedal scales and arpeggios; the principles of hymn playing. Sophomore, first semester, one hour a week, by appointment.

2.—MANUAL AND PEDAL STUDIES. Buck's Studies in Pedal Phrasing; Schmidt's Organ Etudes; Bach's Little Preludes and Fugues, Flagler's The Organist's Treasury, and other selections. Sophomore, second semester, one hour, by appointment.

3.—SERVICE AND SOLO PLAYING. Buck's Choir Accompaniment. Various styles of hymn playing; accompaniment of solo and chorus. Schneider's Pedal Studies, easier preludes and fugues of Bach and Mendelssohn. Modern pieces by Batiste, Lemmens, Guilmant, and others. Junior, first semester, two hours, by appointment.

4.—SERVICE AND SOLO PLAYING. Arrangement of piano accompaniment for organ. Practice in accompanying singers. The easier sonatas of Mendelssohn, Merkel, Guilmant, and others. Junior, second semester, two hours, by appointment.

5.—CHURCH AND CONCERT PLAYING. Practical work in playing the church service. The more difficult fugues and sonatas. Concert pieces by Widor, Guilmant, Saint-Saëns, Thiele, and others. Senior, first semester, two hours a week, by appointment.

6.—CHURCH AND CONCERT PLAYING. Extemporization and transposition. Program making. Preparation of a recital. Senior, second semester, two hours a week, by appointment.

7.—CHURCH MUSIC. The history of church music, examination of different schools and styles. Senior, first semester, one hour a week.

8 and 9.—ORGAN CONSTRUCTION. Examination of tracker, tubular pneumatic, and electric action in available organs. Practice in tuning. One hour a week, Junior year, by appointment.

PIANOFORTE.

Professor PREYER.
 Assistant Professor GREISSINGER.
 Assistant Professor SWEENEY.
 Miss MILLER.
 Miss EMLEY.

Courses 1 to 12, inclusive, are open only to students of the School of Fine Arts. Course 13 is open only to graduates in piano.

1 and 2.—PIANO. Hanon: Virtuoso Pianist. A limited number of studies from the following: Hoffman, Etudes for the Left Hand; Cramer-Buelow, Sixty Selected Etudes; Preyer, Twenty Etudes, op. 25 (Schirmer); Bach, two-part inventions (Litolff, No. 42), etc. Sonatas by Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, twice a week, by appointment. Assistants.

3 and 4.—PIANO. Pischna: Technical Exercises. Etudes, selected according to the needs of the pupil, from Jensen, op. 32; MacDowell, op. 39; Haberbier, Etudes Poesies, op. 53; Preyer, op. 30 and op. 45; Hollaender, intermezzi for left hand; Bach, three-part inventions. Concertos by Mozart, Hummel, etc. Selections from classic and modern compositions. Sophomore, throughout the year, twice a week, by appointment. Assistants.

5 and 6.—Phillipp: Daily Exercises. Clementi's Gradus ad Parnasum; Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tempered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelssohn, etc.; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Preyer.

7 and 8.—Joseffy: School of Advanced Piano Playing. Phillipp, Etudes for the Left Hand; Etudes from Chopin, op. 10 and op. 25; Rubinstein, op. 23, etc. Sonatas and concertos by Beethoven, Weber, Grieg, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. Preyer.

9 to 12.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills, octaves, chords, etc. Freshman and Sophomore, throughout the year. Wednesday, 3:30 to 4:30. Miller.

13.—TEACHING MATERIALS. A study of teaching materials for piano. Each pupil is required to keep a notebook, teach one practice student and attend a one-hour class each week. Open to all classes but Freshman, and to advanced special students. Required of candidates for a certificate in piano, once a week, throughout the year, by appointment.

PHYSICAL EDUCATION.

Professor NAISMITH.
 Associate Professor GOETZ.

1.—MARCHING. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; gymnastic games for recreation. First semester. Goetz.

2.—ADVANCED WORK IN FREE-HAND. Calisthenics, and hygienic work on the apparatus; athletics of an all-round nature; games for skill and physical judgment. Second semester. Goetz.

3.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. Fancy marching; games requiring skill and self-control; squad leading in calisthenics and apparatus work. First semester. Goetz.

4.—SPECIALIZING IN SOME LINE OF EXERCISE. Fencing and broadsword; conducting games, competitions, and exhibitions. Second semester. Goetz.

PHYSICS.

Professor KESTER.
Assistant Professor STIMPSON.

2.—ELEMENTARY ACOUSTICS. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony. Required of students of the School of Fine Arts. Third half-term, Monday and Wednesday, at 4:30. Given in alternate years. Stimpson.

PUBLIC-SCHOOL MUSIC.

Music Supervisors' Courses.

TEACHING OF MUSIC IN ELEMENTARY SCHOOLS. Logical development in teaching: Rote song; staff notation; scales without technical explanation; scales with technical explanation; use of paper keyboards; ear training; reading at sight; triads; chords; simple modulation; transposition.

General Pedagogical Problems.—Advantage of normal training; relation of supervisor to grade teacher, principal, and superintendent; types of children. Examination of books and materials.

EAR TRAINING AND DICTATION. *First Year.*—Melodic and rhythmic dictation within the key; triads in all forms; triads in key relation, major and minor; the dominant sept chord.

Second Year.—Short review of first-year work; two-part melodic dictation; simple modulations; the various sept chords and their resolutions and progressions; chromatic and passing tones; dictation work with chords.

SIGHT SINGING OR SOLFEGGIO. *Elementary.*—Degree-wise progressions within the key; tapping rhythm; drill on simple intervals in chord lines; individual and class work. Textbook, "Melodia," Cole and Lewis.

Intermediate and Advanced.—More difficult problems in rhythm and intervals; two-, three- and four-part work. Texts: "Melodia," Cole and Lewis; "Harmonia," Cole and Lewis.

Students may enter classes upon examination or satisfactory completion of previous work.

TEACHING OF MUSIC IN HIGH SCHOOLS. High-school music from artistic and scientific viewpoints. Choral singing (including sight singing); girls' and boys' glee clubs; high-school orchestra; classes in history and theory (harmony, ear training, analysis). Outlines for courses of study in logical development of teaching the simpler forms of musical theory, suitable for use in high schools.

General Pedagogical Problems.—The general supervisor as high-school teacher of music; preparation of University graduates for teaching music and some other subject; the relation of the music teacher to other teachers in the high school; value of courses in psychology and education to those preparing to teach music; planning work for high schools where no definite courses have been followed. Examination of books and materials.

Practice teaching and observation of classes in Oread Training School, by appointment with director of this department.

FORM AND ANALYSIS. Reading of simple chords from hymns and chorales; analysis of keys in songs and piano music, with particular attention to modulation and key relationship, the use of passing tones, simple suspensions. Analysis of some of Bach's Inventions, Mendelssohn's Songs without Words, etc., for illustrations of the simpler musical forms. This course not required of those completing the regular Fine Arts course.

School of Education Courses.

1.—METHODS OF TEACHING. Three hours, second semester, at 10:30. This course will deal with those fundamental principles of method that will be most helpful to teachers in the organization and presentation of subject matter. The illustrative materials will be taken from a wide range of subjects, but the emphasis will be upon the problems that pertain particularly to the elementary schools. Nutt.

2.—ELEMENTARY EDUCATION. Three hours, second semester, at 8:30. The elementary school and its problems are considered in the light of the historical development, characteristic tendencies, position in the educational system, organization, relation to the community, and course of study. Among the topics discussed are: compulsory education; reorganization of the curriculum; length of period for elementary education; vacation schools; playgrounds and physical education; standard tests; progression through the grades; systems of promotion; special classes; and rural education. Olney.

College Course.

1a.—GENERAL PSYCHOLOGY. Three hours, first semester, at 10:30, on Monday and Wednesday, and third hour by appointment. A general study of human consciousness and behavior, with reference both to scientific theory and to practical application. This course is a prerequisite to 1b, and to courses 2a, 2b, and 50 to 69, inclusive; but it can be taken at the same time with 1b. It is required for admission to the School of Education. The course is open to students who have taken psychology in high school, as well as to those who have not done so. It should be preceded by elementary courses in the biological and physical sciences. Ogden, Dockeray.

VIOLIN.

1 and 2.—KREUTZER'S FORTY STUDIES. Scale Studies by Alard or Schradieck. Selections from Sevcik's Four Thousand Bow Studies. Solos by Singelee, Alard, Leonard, Bohm, Daube, and others. Duets by Mazas and Dancla. Concertos by Rode and De Beriot.

3 and 4.—KREUTZER'S FORTY STUDIES. Fiorillo's Thirty-six Studies. Scale Studies by Alard or Schradieck. Selections from Sevcik's Four Thousand Bow Studies. Sonatas, concertos, selections from compositions of Bach, Handel, Beethoven, De Beriot, Ernst, Vieuxtemps, Viotti, Wieniawski, Brahms, Leonard, Sarasate, Hubay, and Kreisler. Ensemble playing.

5 and 6.—KREUTZER'S FORTY STUDIES. Fiorillo's Thirty-six Studies. Selections from Sevcik's Technic Studies. Sonatas of Bach, Handel, Beethoven, Rubenstein, Franck, Grieg, and Sjogren. Selections from compositions of Wieniawski, Leonard, Hubay, Sarasate, Bazzini, Saint-Saëns, Vieuxtemps, Zarzycki, Natchez, Shubert, Schumann, and Chopin. Violin duets. Standard concertos. Ensemble playing.

7 and 8.—FIORILLO'S THIRTY-SIX STUDIES. Rode's Twenty-four Studies. Selections from Sevcik's Technic Studies. Sonatas for violin alone by Bach. Compositions of Handel, Tartini, Ernst, Paganini, Wieniawski, Vieuxtemps, and others. Standard concertos. Selections from compositions of American composers, including study of trios, quartets, and orchestral compositions. Other ensemble work.

VOCAL CULTURE.

Dean BUTLER.

Professor DOWNING.

Associate Professor FARRELL.

Miss REYNOLDS.

Courses 1 to 5, inclusive, are required of all students taking the four years' work in vocal culture; courses 1, 2, 3, and 5 are open to all other musical students. Course 5 is required of all Sophomores. Course 8 is required of all students wishing to graduate as teachers.

1 and 2.—TONE PLACING. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Marchesi, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspeare. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

3 and 4.—VOICE EXTENSION. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspeare. English and Italian ballads. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

5 and 6.—STUDY OF TONE COLOR. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment. Downing or Farrell.

7 and 8.—METHODS OF TONE PLACING AND BREATHING. A comparative study. Exercises for bravura singing from Marchesi. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from Italian opera and English oratorio. Senior, twice a week throughout the year, by appointment. Downing or Farrell.

9.—SIGHT SINGING. Sound relationship. Time relationship. Rhythm. Dictation exercises. Unison, two parts, three parts, and four parts. Downing.

10.—OPERA. Solo and chorus drill in the standard operas. Those taking this course are united with other singers from the University and city to form the school of grand opera. One presentation of opera will be given each year.

11.—ORATORIO. Solo and chorus drill in the standard works. Singers from the University and city are united to form the Festival Chorus. Presentation of oratorios will be given each year. This society annually engages a standard orchestra and eminent soloists for the spring festival.

12.—TEACHER'S COURSE. For students desiring to prepare themselves especially for teaching. Text: Manual Garcia. Downing.

For description of graduate courses, see Graduate Catalog.

A LIST OF COMPOSITIONS

RENDERED BY VARIOUS UNIVERSITY MUSICAL ORGANIZATIONS AND
VISITING ORCHESTRAS.

Songs and Piano Pieces Not Included.

FOR CHORUS AND ORCHESTRA.

- Bruch Cantata, "Fair Ellen."
 Gaul "List, the Cherubic Host."
 Goring-Thomas .. Cantata, "The Swan and the Skylark."
 Gounod Motet, "By Babylon's Wave."
 Opera, "Faust" (in concert form).
 St. Cecilia Mass.
 Jensen "Song of the Nuns."
 Mendelssohn The Forty-second Psalm.
 A Midsummer-Night's Dream.
 Hymn of Praise.
 Rossini Stabat Mater.
 Sullivan Cantata, "The Golden Legend."
 Wagner Scenes from "Parsifal."
 Spinning Scene from "The Flying Dutchman."
 Weber Opera, "Der Freischütz" (in concert form).

OPERAS RENDERED ON THE STAGE.

- Sullivan The Pirates of Penzance.
 Patience.
 Princess Ida.
 Mikado.
 Yeomen of the Guard.

SYMPHONIES RENDERED BY ORCHESTRA.

- Beethoven Third and Fifth.
 Dvorak "From the New World."
 Cesar Franck ... Symphony in D minor.
 Goldmark "Country Wedding."
 Haydn "Military."
 "Surprise."
 Mendelssohn Italian.
 Raff "Im Walde."
 Schubert "Unfinished."
 Schumann Symphony in B flat.
 Tchaikowski Fourth and Sixth.

OVERTURES RENDERED BY ORCHESTRA.

- Auber "Masaniello."
 "Mason and Locksmith."
 "Fra Diavolo."
 Beethoven "Leonora No. 3," "Egmont."
 Flotow "Stradella."
 Goldmark In Springtime.
 Kellar Bela Hungarian Lustspiel Overture.
 MacCunn "Land of the Mountain and the Flood."
 Mozart "Don Juan," "Magic Flute."
 Nicode Festival Overture on Luther's Hymn.
 Rubinstein Festival Overture, "Triumphale."
 Skilton "Mt. Oread."
 Prelude to Opera "Ticonderoga."

| | | |
|----------|-------|-----------------------|
| Sullivan | ..... | "Di Ballo." |
| Suppe | ..... | "Poet and Peasant." |
| | | "Flying Dutchman." |
| Wagner | ..... | "Lohengrin," Prelude. |
| | | "Tannhäuser." |
| Weber | ..... | "Der Freischütz." |
| | | "Oberon." |

CONCERTOS AND FANTASIES FOR SOLO INSTRUMENTS AND ORCHESTRA.

| | | |
|-----------------|-------|---|
| For Piano | ..... | Beethoven, in C minor. |
| | | Chaminade, Concertstück. |
| | | Grieg, Concerto, in A minor. |
| | | Liszt, in E flat, Hungarian Fantasy. |
| | | Mendelssohn, Capriccio, Op. 22, Concerto in G minor. |
| | | Preyer, Concertstück. |
| | | Rubinstein, in D minor. |
| | | Saint-Saëns, in G minor. |
| | | Tchaikowski, in B flat minor. |
| For Violin | ..... | Bruch, in G minor. |
| | | Massenet, Melodie. |
| | | Mendelssohn, in E minor. |
| | | Sarasate, Gypsy Airs. |
| | | Schubert, The Bee. |
| | | Saint-Saëns, Rondo Capriccioso. |
| | | Tchaikowski, in D minor. |
| | | Vieuxtemps, Fantasie Appassionata, Concerto in D minor. |
| | | Wieniawski, in D minor. |
| For Violoncello | .. | Boellman, Symphonic Variations. |
| | | Bruch, Kol Nidrei. |
| | | Gillet, Passepied. |
| | | Golterman, Concerto in A minor. |
| | | Servias, Fantasie on "The Daughter of the Regiment." |
| | | Saint-Saëns, Concerto. |
| For Harp | ..... | Zabel, Concerto. |

ARIAS AND SONGS WITH ORCHESTRA.

| | | |
|---------------|-------|--|
| Goring-Thomas | .. | "Now is the Hour of Soft Enchantment." |
| Gounod | ..... | Aria from "The Queen of Sheba." |
| | | "Lend Me Your Aid." |
| | | "More Regal is He." |
| | | "Oh, Divine Redeemer." |
| | | "There is a Green Hill." |
| | | "Vulcan's Song." |
| | | Serenade. |
| Handel | ..... | "Honor and Arms." |
| Haydn | ..... | "With Verdure Clad." |
| | | "With Joy the Impatient Husbandman." |
| Mendelssohn | .... | Duet, "I Waited for the Lord." |
| | | Cavatina from "St. Paul." |
| Meyerbeer | ..... | Cavatina from "Roberto." |
| Puccini | ..... | Arias from "Madam Butterfly" and "La Tosca." |
| Saint-Saëns | ..... | "Oh, Love, of Thy Might." |
| Weber | ..... | Aria from "Der Freischütz." |

MISCELLANEOUS PIECES RENDERED BY ORCHESTRA.

DANCES.

| | | |
|---------|-------|-----------------------|
| Brahms | ..... | Two Hungarian Dances. |
| Delibes | ..... | Valse Lente. |
| Dvorak | ..... | Slavonic Dance. |
| German | ..... | Henry VIII Dances. |

- Gounod Faust Ballet.
 Grieg Norwegian Dances.
 MacDowell "Indian" Suite.
 Moszkowski Spanish Dance.
 Roth Gavotte.
 Severn Gavotte Moderne.
 Thomas "Mignon" Gavotte.

MARCHES.

- Berlioz Hungarian March.
 Bizet "Toreador" March.
 Costa "Damascus" March.
 Elgar "Pomp and Circumstance."
 Gounod "Pontifical" March.
 "Funeral March of a Marionette."
 Kretschmer "Coronation" March.
 Lachner March in B flat.
 Mendelssohn War March from "Athalie."
 Meyerbeer Wedding March.
 "Coronation" March.
 Mozart Priests' March.
 Nessler Wedding March.
 Raff March from "Lenore" Symphony.
 Schubert "Military" March in D.
 Strauss "Egyptian" March.
 "Merry War" March.
 "On to the Battle-field" March.
 "Persian" March.
 Verdi "Aida" March.

OPERATIC SELECTIONS.

- Flotow Martha.
 Gounod Faust.
 Mascagni Cavalleria Rusticana.
 Strauss The Bat.
 Wagner "Waldweben" from "Siegfried."
 Bacchanale from "Tannhäuser."
 Verdi Il Trovatore.

RHAPSODIES.

- Lalo Spanish Rhapsody.
 Liszt Second Hungarian Rhapsody.
 Stanford Irish Rhapsody.

SYMPHONIC POEMS.

- Saint-Saëns Danse Macabre.
 Omphale's Spinning Wheel.
 Liszt The Preludes.
 Skilton A Carolina Legend.

CHAMBER MUSIC.

- Bach Chaconne. Sonata in G minor, for Violin only.
 Sonata for two Violins.
 Beethoven Sonata for Violin and Piano.
 F major.
 A minor.
 Stringed Quartet in G major.
 Trios in C minor and G major.
 Boehm Trio in G.
 Donizetti-St.Lubin, Sextet from "Lucia," for Violin alone.
 Dvorak Dumky Trio.
 Gade Sonata for Violin and Piano, in D minor.
 Trio in F major.
 Novellette Trio.

| | | |
|-------------|-------|--|
| Goldmark | ..... | Suite for Violin and Piano. |
| Grieg | ..... | Norwegian Dances for Trio. |
| | | Sonatas for Violin and Piano. |
| | | F major. |
| | | G minor. |
| | | C minor. |
| Handel | ..... | Sonata for Violin and Piano, in A major. |
| Haydn | ..... | Trio in G major. |
| Hoffman | ..... | Trio in D major. |
| Mendelssohn | .... | Trio in D minor. |
| | | Trio in C minor. |
| | | String Quartet in E minor. |
| Mozart | ..... | Sonata for Violin and Piano, E major. |
| | | Minuet from the Clarinet Quintet. |
| Rubinstein | ..... | Sonata for Violin and Piano, G major. |
| | | Sonata for Violoncello and Piano, D minor. |
| | | String Quartet, C minor. |
| Schubert | ..... | Trio in E flat. |
| Schuett | ..... | Suite for Violin and Piano. |
| Schumann | ..... | Fantasy Pieces for Trio. |
| Sitt | ..... | Trio in B flat. |
| Skilton | ..... | Sonata for Violin and Piano, G minor. |

The above is only a partial list.

**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION VI
SCHOOL OF LAW**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

| | |
|--|-------------------|
| MR. ED. T. HACKNEY, <i>President</i> , Wellington..... | Term expires 1917 |
| MR. EDWARD W. HOCH, Marion..... | Term expires 1919 |
| MRS. J. M. LEWIS, Kinsley..... | Term expires 1917 |
| MR. LEE HARRISON, <i>Secretary</i> , Cherokee. | |

FACULTY.

FRANK STRONG, Ph. D., President.

JAMES W. GREEN, A. M., Dean, and Professor of Law.

WILLIAM L. BURDICK, Ph. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS, B. S., LL. B., Professor of Law.

HENRY W. HUMBLE, A. M., J. D., Professor of Law.

EDWARD D. OSBORN, Professor of Law.

Lecturers for 1916-1917.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

HENRY F. MASON, Justice of the Supreme Court of Kansas.

ROUSSEAU A. BURCH, Justice of the Supreme Court of Kansas.

J. C. RUPPENTHAL, Justice of the District Court, Russell.

W. C. MICHAELS, Attorney at Law, Kansas City, Missouri.

D. A. VALENTINE, Clerk of the Supreme Court of Kansas.

THOS. E. WAGSTAFF, Attorney at Law, Independence, Kansas.

EDWIN A. KRAUTHOFF, Attorney at Law, Kansas City, Missouri.

The School of Law.

PURPOSE OF THE SCHOOL.

It is the aim of the School of Law to give its students a thorough acquaintance with the general principles of American law and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union; also to give those who do not expect to become practicing attorneys, but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

DEGREE GRANTED.

The course of study of the School of Law occupies three years, and leads to the degree of bachelor of laws (LL. B.).

CERTIFICATE OF ATTENDANCE.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the School.

EXAMINATIONS.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course.

ADMISSION TO THE BAR.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. This act provides that applicants must be graduates of this School of Law or of an institution of equal standing, or they must have studied law for three years in a law office. The board of examiners meets at Topeka on the third Monday in January and June. Applications for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of application may be obtained from the clerk of the supreme court, Topeka, Kansas.

All applicants must present high-school certificates or affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit: Three years English—grammar, rhetoric, and literature; arithmetic, algebra, geometry; general history, Roman, English and American history; civil government; the elements of physics, physical geography, botany, biology; political economy and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

ADMISSION.

WORK IN PREPARATION FOR LAW. All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had a thorough university training before they entered upon the study of law.

taurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can lessen expenses materially.

STUDENT HONORS AND ACTIVITIES.

HONORS. By resolution, the State Bar Association of Kansas, as a recognition of the School of Law and for the purpose of encouraging its students to work along the line of legal literature, assigns a place on the literary program of the annual meeting at Topeka to that student of the Senior class who prepares the best paper on some legal topic assigned by the Law Faculty. The merits of the papers submitted are passed upon by a committee appointed for the purpose.

See, also, "Prizes and Aids," General Section, p. 49.

COOLEY CLUB. Meetings of the club occur once each week. Any student of the School of Law is eligible, but the membership is confined at present mainly to the members of the Junior and Middle classes. Legal questions are debated, and to this is added the work of the ordinary literary debating society.

KENT CLUB. The members of the Kent Club are, in the main, members of the Senior class, although any student in the School of Law is eligible to membership. The work consists of the discussion of legal, economic, and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

DEBATING. Interstate debates are held each year with Oklahoma, Missouri, and Colorado state universities. Members of the Law School are admitted to the preliminary contest held for the purpose of choosing representatives on each of these debates. Those chosen receive practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students are also eligible to membership in the general literary clubs of the University.

EQUIPMENT.

GREEN HALL. A building for the School of Law was completed during the summer of 1905, at a cost of \$65,000, and is one of the most complete and best-equipped law buildings in the West. It has three floors, devoted to recitation rooms, offices, library, and rooms for the Law School clubs. The library contains space for about 20,000 volumes, and private study rooms for students and Faculty open into the reading room of the library. A large room is set aside for a practice court, and the best facilities possible are available for students of the law.

LIBRARIES. The law library is composed of 8625 volumes, for the exclusive use of the students of the School of Law. The library has an excellent equipment of the best law textbooks, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as Lawyers' Reports Annotated, American Decisions, American Reports, the complete *Reporter* system, and the full reprints of the English cases. Limited space has prevented as rapid growth of the library as desired, and in the new building large additions will be made to the library equipment. In addition to the volumes devoted exclusively to law, the University library of 107,262 volumes is at the disposal of the law students. They thus have at hand the largest and best-selected scholarly library in the Southwest. The city library, housed in the Carnegie building, is also open to students of the School of Law for books of fiction and general literature.

STATE LIBRARY. The state library, at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

COLLEGE AND SCHOOL OF LAW IN SIX YEARS.

A regular course in the College is strongly recommended. During his Senior year of the College a student is permitted to elect one half-year's work from the course in the School of Law, for which he will receive credit in his College course. By this arrangement, the student, by reasonable extra work, may finish both the College and the School of Law in six years.

COURSES OF LAW IN THE SUMMER SESSION.

Attention is called to the opportunity of shortening the law course, or of correcting irregularities therein, by taking such law subjects as are offered in the Summer Session of the University.

A course has been arranged which will enable a person who enrolls in three Summer Sessions to graduate after attending two regular sessions of the University, provided he has previously completed the preparatory work required for entrance to the Law School, as laid down in this Catalog.

A candidate desiring to take the Summer Session program should enter a Summer Session at the beginning of his course; his program of sessions will then be as follows: (1) Summer Session; (2) Regular Session; (3) Summer Session; (4) Regular Session; (5) Summer Session.

A student entering in the summer of 1916 would take the following program:

SUMMER SESSION OF 1916.—Agency and Insurance, Partnership and Wills, Criminal Law and Torts.

REGULAR SESSION OF 1916-'17.—Real Property and Roman Law, Corporations, Equity, Bankruptcy, Trusts, Code Pleading, Constitutional Law, Suretyship, Conflict of Laws, and Practice Courts.

SUMMER SESSION OF 1917.—Partnership and Wills, Agency and Insurance, Criminal Law and Torts.

For further details, see Summer Session Section of Catalog, under "Law"; and "Description of Courses," in this section.

SYSTEM OF INSTRUCTION.

It is believed to be proved by experience that, to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of five resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

METHOD OF TEACHING.

There are in general three methods of class instruction in law—by lectures, by textbooks, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the textbook method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advance in the course.

The student is given large opportunity for free discussion of the topics in question, and is brought as much as possible into personal touch with his instructor.

PRACTICE COURTS.

There are three practice courts in the School of Law, all of them under the immediate supervision of the member of the Faculty who devotes the major part of his time to this work. The sessions are held in the court room, which has been fitted with all of the furniture to be found in court rooms in actual practice. Ample accommodations are furnished for judge, jury, and practitioners.

THE FIRST-YEAR PRACTICE COURT.

In the first year, preliminary instruction is first given in the analysis of opinions, and in the preparation of cases for argument. Following this preliminary instruction, court is held under the direction of the member of the Faculty in charge. The places of attorneys, clerk, and other court officers are filled in rotation by members of the class. Cases involving statements of fact are assigned. Written briefs are required to be prepared, served upon the opposing attorneys, and submitted to a court composed of two members of the class and the member of the Faculty. Written opinions containing a full discussion of the legal questions presented are required to be handed down by the student justices.

THE SECOND-YEAR PRACTICE COURT.

The aim of the course of the second year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the common law, equity and code systems of civil procedure are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The code practice of the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw journal entries, instructions, and findings, under direction of the instructor in charge of the course.

THE THIRD-YEAR PRACTICE COURT.

The work of the third year is a continuation of the work of the preceding two years. The student is taught how to begin and prosecute a case in court. The former difficulty of originating facts in practice courts has been overcome, and all the testimony of complicated cases is placed in the hands of witnesses, who are interviewed by the attorneys assigned. The cases are then begun, prosecuted and determined as in actual practice. Juries are drawn and impaneled, the evidence produced, instructions given, verdicts and judgments rendered as in the justice of the peace courts and in the district courts of Kansas. Following this, appeals are prosecuted in due course to the supreme court, where briefs are filed and arguments made as in the supreme court of Kansas.

Only four attorneys are assigned to each case, and there are enough cases for all members of the class to act as trial attorneys and as attorneys in the appellate court. Every member of the Senior class is thus given an opportunity to conduct a case as in actual practice.

Instruction is also given in legal ethics and in office practice.

For members of the courts, a series of lectures on practical topics is arranged for the second term of each year.

CURRICULUM.

SCHEDULE OF COURSES.

KEY: (B.) Professor Burdick. (G.) Dean Green. (Hi.) Professor Higgins. (Hu.) Professor Humble. (O.) Professor Osborn.

FIRST YEAR.

| | | <i>Time.</i> | <i>Hrs.</i> | | | <i>Time.</i> | <i>Hrs.</i> |
|-----------------------|-------|--------------|-------------|-------------------------|-------|--------------|-------------|
| FIRST QUARTER. | | | | SECOND QUARTER. | | | |
| Contracts (G.) | 9:30 | 5 | | Contracts (G.) | 9:30 | 5 | |
| Criminal Law (B.) | 10:30 | 5 | | Agency (Hu.) | 10:30 | 5 | |
| Elementary Law (Hu.) | 11:30 | 5 | | Torts, Tu. Th. (O.) | 11:30 | 2 | |
| Court, Fri. (Hi.) | 1:30 | — | | Court, Fri. (Hi.) | 1:30 | — | |
| THIRD QUARTER. | | | | FOURTH QUARTER. | | | |
| Torts, M. W. Th. (O.) | 9:30 | 3 | | Suretyship (O.) | 9:30 | 5 | |
| Sales (B.) | 10:30 | 5 | | Damages (Hu.) | 10:30 | 5 | |
| Bailments (O.) | 11:30 | 5 | | Domestic Relations (B.) | 11:30 | 5 | |
| Court, Fri. (Hi.) | 1:30 | — | | Court, Fri. (Hi.) | 1:30 | — | |

SECOND YEAR.

| | | <i>Time.</i> | <i>Hrs.</i> | | | <i>Time.</i> | <i>Hrs.</i> |
|-----------------------------------|-------|--------------|-------------|-----------------------------------|-------|--------------|-------------|
| FIRST QUARTER. | | | | SECOND QUARTER. | | | |
| Common-law Pleading (Hi.) | 8:30 | 5 | | Equity Pleading (Hi.) | 8:30 | 5 | |
| Insurance (Hu.) | 9:30 | 5 | | Quasi Contracts (B.) | 10:30 | 5 | |
| Equity, M. W. Fri. (O.) | 11:30 | 3 | | Equity, M. W. Fri. (O.) | 11:30 | 3 | |
| Court, M. W. (Hi.) | 1:30 | — | | Court, M. W. (Hi.) | 1:30 | — | |
| THIRD QUARTER. | | | | FOURTH QUARTER. | | | |
| Bills and Notes, M. W. Fri. (Hu.) | 8:30 | 3 | | Bills and Notes, M. W. Fri. (Hu.) | 8:30 | 3 | |
| Trusts, Tu. Th. (Hu.) | 8:30 | 2 | | Trusts, Tu. Th. (Hu.) | 8:30 | 2 | |
| Evidence (G.) | 9:30 | 5 | | Evidence (G.) | 9:30 | 5 | |
| Code Pleading (Hi.) | 10:30 | 5 | | Conflict of Laws (O.) | 10:30 | 5 | |
| Court, M. W. (Hi.) | 1:30 | — | | Court, M. W. (Hi.) | 1:30 | — | |

THIRD YEAR.

| | | <i>Time.</i> | <i>Hrs.</i> | | | <i>Time.</i> | <i>Hrs.</i> |
|-------------------------|-------|--------------|-------------|---------------------------|-------|--------------|-------------|
| FIRST QUARTER. | | | | SECOND QUARTER. | | | |
| Real Property (B.) | 9:30 | 4 | | Real Property (B.) | 9:30 | 4 | |
| Roman Law (B.) | 9:30 | 1 | | Roman Law (B.) | 9:30 | 1 | |
| Corporations (O.) | 10:30 | 5 | | Corporations (O.) | 10:30 | 5 | |
| Court, Tu. Th. (Hi.) | 1:30 | — | | Bankruptcy, Tu. Th. (Hu.) | 11:30 | 2 | |
| THIRD QUARTER. | | | | FOURTH QUARTER. | | | |
| Real Property (B.) | 9:30 | 4 | | Wills (B.) | 10:30 | 5 | |
| Roman Law (B.) | 9:30 | 1 | | Constitutional Law (G.) | 11:30 | 5 | |
| Partnership (Hu.) | 10:30 | 5 | | Court, Tu. Th. (Hi.) | — | — | |
| Constitutional Law (G.) | 11:30 | 5 | | | | | |
| Court, Tu. Th. (Hi.) | — | — | | | | | |

DESCRIPTION OF COURSES.

FIRST-YEAR COURSES.

1.—ELEMENTARY LAW. First semester, first half, daily, at 11:30. An analytical study of the elements of jurisprudence; a historical examination of the systems of English and American common law and equity; an exemplification of common-law theories in the law of trespass; conversion. Pound's History and System of Common Law. Humble.

2.—CRIMINAL LAW. First semester, first half, daily, at 10:30. Common-law and statutory offenses; parties in crime; classification and elements of the specific offenses; criminal procedure; jurisdiction, arrest, extradition, examination and bail, indictment, trial, evidence, proceedings after verdict, error, appeal. Clark and Marshall on Criminal Law; lectures; selected cases; drawing indictments. Burdick.

3.—CONTRACTS. First semester, daily, at 9:30. The formation of contracts; offer and acceptance; form and consideration; capacity of parties; reality of consent; legality of objects; operation of contracts; limits of contractual obligations; assignment of contracts; discharge of contracts, by agreement, by performance, by breach, by operation of law. Clark, Benjamin, and Messing's Cases. Green.

4.—AGENCY. First semester, second half, daily, at 10:30. Creation and termination of relation; evidence of appointment; ratification; construction of authorizations; execution of authority; rights, duties, and liabilities of principal, agent, and third party *inter se*; particular classes of agents. Mechem's Outline and Cases on Agency. Humble.

5.—TORTS. First semester, second half, Tu. Th., at 11:30; second semester, first half, M. W. F., at 9:30. General principles of liability in tort; intent and negligence; proximate cause; active misconduct and tortious omissions; liabilities of persons occupying certain relations; deceit; defamation; justification and excuse; contributory negligence. Bohlen's Cases on Tort. Osborn.

6.—SALES. First semester, second half, daily, at 10:30. Sales distinguished from kindred contracts; formation of the contract; effects of the contract; avoidance of the contract; performance of the contract; rights of unpaid seller against the goods, including lien and stoppage *in transitu*; remedies upon breach of the contract. Burdick's (W. L.) Cases on Sales. Burdick.

7.—BAILMENTS AND CARRIERS. Second semester, first half, daily, at 11:30. Bailments; carriers of goods; carriers of passengers; duty to serve; liability of carriers for loss or injury, for delay, for misdelivery; limitation of liability; tickets and bills of lading; freight; connecting carriers. Green's Cases on Carriers. Osborn.

8.—SURETYSHIP. Second semester, second half, daily, at 9:30. Forms of suretyship; essentials of the contract; statute of frauds; exoneration; reimbursement; subrogation; contribution; defenses and discharge of surety. Henning's Cases on Suretyship. Osborn.

9.—DAMAGES. Second semester, second half, daily, at 10:30. *Damnum absque injuria*; nominal damages; liquidation of damages; aggravation and mitigation; exemplary damages; compensatory damages; nonpecuniary losses; damages in specific actions. Mechem and Gilbert's Cases. Sedgwick's Text. Humble.

10.—DOMESTIC RELATIONS, OR FAMILY LAW. Second semester, second half, daily, at 11:30. Husband and wife; marriage; effect of marriage; statutory modifications of the common law; the wife's separate property; community property; separation and divorce. Parent and child; parental rights and duties; filial duties. Guardian and ward: common-law, chancery, and statutory guardians; rights and duties of guardians; management and sale of the ward's property; guardian's accounts. Infants: general principles governing the contracts, torts, crimes, and general juristic capacity of minors. Master and servant; general principles. Lectures: Woodruff's Cases. Burdick.

11.—PRACTICE COURT. First and second semesters, F., at 1:30. (For synopsis see *supra* in this announcement.) Higgins.

SECOND-YEAR COURSES.

12.—COMMON-LAW PLEADING. First semester, first half, daily, at 8:30. The development of courts and of systems of pleading; an analytical and historical study of remedies at common law, including ancient modes of trial; forms of actions; parties to actions; order of proceeding; pleadings; production of issue; forms of traverse; demurrers; materiality, unity and certainty in pleading. Case book. Higgins.

13.—INSURANCE. First semester, first half, daily, at 9:30. The theory of insurance with reference to fire, marine, accident, and life risks; the legal relation of the parties to the insurance contract examined historically and critically, with a view to developing the fundamental principles of the contract and the law merchant underlying it; interpretation and construction of the standard policies. Wambaugh's Cases; Humble's Text. Humble.

14.—EQUITY. First semester, M. W. F., at 11:30. Nature of equity jurisdiction; specific performance of contracts; relief for and against third persons; incidents of the right to specific performance; bills for an account; relief against torts; bills of interpleader; bills *quia timet*; reformation and rescission for mistake. Ames' Cases on Equity Jurisdiction. Osborn.

15.—EQUITY PLEADING. First semester, second half, daily, at 8:30. Equity courts; parties; bills; multifariousness and impertinence; nature and office of demurrers, pleas, answers and replications; decrees; petitions for rehearing and bills of review; modifications by the new federal equity rules. Cases on Equity Pleadings, and the New Federal Equity Rules. Higgins.

16.—QUASI CONTRACTS. First semester, second half, daily, at 10:30. Origin and nature of quasi contracts; distinguished from contracts and torts; right of recovery upon a record; right of recovery upon a statutory, official or customary duty; right of recovery upon unjust enrichment; general principles governing unjust enrichment, including money paid under mistake, constraint, duress, or compulsion. Woodruff's Cases on Quasi Contracts. Burdick.

17.—BILLS AND NOTES. Second semester, M. W. F., at 8:30. The law merchant; delivery; form and requisites; maker's contract; acceptor's contract; certified paper; drawer's contract; indorser's contract; presentment and demand; notice; protest; accommodation parties; right of holder; defenses; payment. Bigelow's Cases on Bills, Notes, and Cheques. Humble.

18.—TRUSTS. Second semester, Tu. Th., at 8:30. Trusts distinguished from other legal relationships; language necessary to create; consideration; statute of frauds; subject matter of trusts; nature of *cestui's* interest; transfer of trust *res*; extinguishment; duties of trustee. Ames' Cases on Trust (2d ed.). Humble.

19.—EVIDENCE. Second semester, daily, at 10:30. The nature and principles of evidence; the rules which govern the production of testimony; instruments of evidence. Hughes on Evidence; Wigmore's Cases. Green.

20.—CODE PLEADING. Second semester, first half, daily, at 10:30. Its relation to the common-law and equity systems; parties; splitting and joinder of causes of action; general rules of pleading; contents of complaint or petition, answer, and reply; nature and office of demurrers, motions, and bills of particulars; amendments; construction of pleadings. Sunderland's Cases. Higgins.

21.—CONFLICT OF LAWS. Second semester, second half, daily, at 10:30. General rules; domicile; capacity; property; obligations; family law; inheritance; foreign administrations. Lorenzen's Cases on Conflict of Laws. Osborn.

22.—PRACTICE COURT. First and second semesters, M. W., at 1:30. (For synopsis see *supra* in this announcement.) Higgins.

THIRD-YEAR COURSES.

23.—REAL PROPERTY. First semester, M. W. Th., at 9:30; second semester, first half. Nature of real property and tenure thereof; feudal land law. Rights in real property; estates; law of landlord and tenant. Liens upon real property. Acquisition and transfer of real property title in general; powers; deeds and their requisites; abstracts of title. Burdick's Text and Cases on Real Property; practice in conveyancing; examination of abstracts of title. Burdick.

24.—ROMAN LAW. First semester, F., at 9:30; second semester, first half. History and sources; the Twelve Tables; codification; law of persons; law of things; law of actions; criminal law of Rome; modern development of Roman law into the civil law of Europe and America. Institutes of Justinian; Howe's Studies in the Civil Law; lectures. Burdick.

25.—CORPORATIONS. First semester, daily, at 10:30. Legal conception of a corporation; corporations *de jure* and *de facto*; corporate powers; *ultra vires* acts; subscriptions to stock; directors; stockholders; creditors; promoters; dissolution. Canfield and Wormser's Cases on Private Corporations. Osborn.

26.—BANKRUPTCY. First semester, second half, Tu. Th., at 11:30. Jurisdiction; who may be bankrupts; petitioning creditors; acts of bankruptcy; property which passes to trustee; provable claims; duties of bankrupt and trustee; protection, exemptions, and discharge of bankrupt. Williston's Cases on Bankruptcy. Humble.

27.—PARTNERSHIP. Second semester, first half, daily, at 10:30. Formation of a partnership; partnership as to third persons; nature of a partnership; power of partners; rights and remedies of creditors; duties and liabilities of partners; dissolution of partnership; accounting and distribution; limited partnerships. Gilmore's Cases on Partnership. Humble.

28.—CONSTITUTIONAL LAW. Second semester, daily, at 11:30. General principles governing the federal and state constitutions; construction and interpretation; taxation; police power; eminent domain; civil rights; constitutional guaranties; respective powers of state and federal governments in the regulation of commerce; laws impairing the obligation of contracts; *ex post facto* laws and retroactive laws. Hall's Cases. Green.

29.—WILLS. Second semester, second half, daily, at 10:30. History and form; capacity to make a will; effect of mistake; fraud, undue influence; execution; revocation; rules of construction; legacies; probate

of wills; duties of executors. Gardner on Wills; selected cases. Burdick.

30.—PRACTICE COURT. First and second semesters, Tu. Th., at 1:30. (For synopsis see *supra* in this announcement.) Higgins.

COURSE FOR MINING ENGINEERING STUDENTS.

MINING LAW. A course outlining the laws relating to the mining industries. Lectures and recitations, one hour per week, second semester, in alternate years. (Given in 1916-'17.) Costigan's Cases on Mining Law. Mining engineering students must take this course before graduating. Humble.



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION VII
SCHOOL OF PHARMACY**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

| | |
|--|-------------------|
| MR. ED. T. HACKNEY, <i>President</i> , Wellington..... | Term expires 1917 |
| MR. EDWARD W. HOCH, Marion..... | Term expires 1919 |
| MRS. J. M. LEWIS, Kinsley..... | Term expires 1917 |
| MR. LEE HARRISON, <i>Secretary</i> , Cherokee. | |

FACULTY.

- FRANK STRONG, Ph. D., President.
LUCIUS E. SAYRE, Ph. M., Dean, and Professor of Pharmacy and Materia Medica.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry.
ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.
WILLIAM C. STEVENS, M. S., Professor of Botany.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
L. D. HAVENHILL, Ph. M., Secretary, and Professor of Pharmacy and Pharmaceutical Chemistry.
FREDERICK E. KESTER, Ph. D., Professor of Physics.
HAMILTON P. CADY, Ph. D., Professor of Chemistry.
JOHN SUNDWALL, M. D., Professor of Anatomy.
FREDERICK H. BILLINGS, Ph. D., Professor of Bacteriology.
SAMUEL A. MATTHEWS, M. D., Professor of Physiology and Experimental Pharmacology.
FRANK B. DAINS, Ph. D., Professor of Chemistry.
ELMER F. ENGEL, A. M., Professor of German.
JOHN N. VAN DER VRIES, Ph. D., Professor of Mathematics.
WILLIAM A. WHITAKER, Ph. D., Associate Professor of Metallurgy.
WILLIAM H. TWENHOFEL, Ph. D., Associate Professor of Geology.
GEORGE E. COGHILL, Ph. D., Associate Professor of Anatomy.
FREDERICK N. RAYMOND, A. M., Associate Professor of English.
HERMAN C. ALLEN, Ph. D., Associate Professor of Chemistry.
C. FERDINAND NELSON, Ph. D., Associate Professor of Physiological Chemistry.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.
GEORGE N. WATSON, Ph. C., Assistant Professor of Pharmacy, in charge of Drug Laboratory.
CLIFFORD C. YOUNG, A. B., Assistant Professor of Chemistry and Director of State Water Survey.
PAUL V. FARAGHER, Ph. D., Assistant Professor of Chemistry.
WALTER S. LONG, A. M., Assistant Professor of Chemistry, in charge of Food Laboratory.
GEORGE W. STRATTON, Ph. D., Assistant Professor of Chemistry.
FREDERICK ORVILLE BLAYLOCK, Ph. C., Assistant in Drug Laboratory.

ADMINISTRATIVE COMMITTEE.

- L. E. SAYRE, *Chairman*.
L. D. HAVENHILL.
CHAS. M. STERLING.

The School of Pharmacy.

PURPOSE AND ORGANIZATION.

The School of Pharmacy of the University of Kansas was established by legislative enactment in 1885. The object of the School is to give instruction and practical training in all branches connected with the pharmaceutical profession. There are four general divisions of the required subjects—namely, botany, chemistry, pharmacy, and pharmacology. These four divisions are again subdivided into groups. For example, chemistry is divided into general chemistry, qualitative analysis, quantitative analysis, organic chemistry, urine and stomach analysis, testing of pharmaceutical chemicals, analysis of drug preparations, physiological chemistry, and assaying of crude drugs.

DEGREES.

The three curricula in the School of Pharmacy lead, respectively, to the following degrees:

- Graduate in Pharmacy.
- Pharmaceutical chemist.
- Bachelor of science.

ADMISSION.

There are two methods of admission to the School of Pharmacy: First, by examination; second, by certificate.

1. **BY EXAMINATION.** Time and place of examination for subjects required for admission to the School of Pharmacy are the same as for admission to the College. For schedules, see General Information Section, p. 45.

2. **BY CERTIFICATE.** Candidates for admission to the two-, three- and four-year courses must comply with the requirements for admission to the College, viz.: four years of approved high-school work, except that students of mature years who have had two or more years' drug-store experience may be allowed credit on some of the required high-school work. For details write to the Secretary of the Faculty.

Students having entrance deficiencies are required to remove them during the first year.

SPECIAL STUDENTS. Students over twenty-one years of age desiring to avail themselves of the instruction offered in the various departments of the School of Pharmacy are admitted to such courses as, in the judgment of the Faculty, they can reasonably be supposed to pursue with profit. No prerequisites other than those above stated will be required of such students, nor will they have to comply with the regular entrance requirements. It is hoped that pharmacists throughout the state, who, wish to increase their efficiency will avail themselves of the opportunities here offered.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 12, 13, or 14, 1916.

Registration at a later date will be permitted only on the payment of a fee of one dollar.

After registration has been completed with the Registrar, and after fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 13 and 14, 1916, and on the first day of the second semester.

FEES AND EXPENSES.

| | |
|--|--------|
| Matriculation fee, for residents of the state | \$5.00 |
| for nonresidents of the state | 10.00 |
| Incidental fee, for residents of the state, per year | 25.00 |
| for nonresidents of the state, per year..... | 35.00 |
| Diploma fee | 5.00 |

In addition to the above fees, students pay for the material used and the apparatus broken in the various laboratory courses. This varies with the economy of the student. For the two years it ranges from \$12 to \$15 for the first year and from \$23 to \$25 for the second year.

REGISTRATION—STATE BOARD OF PHARMACY.

Graduates of the School of Pharmacy may become registered pharmacists in Kansas without examination upon presenting to the State Board of Pharmacy satisfactory evidence of having had the following amount of practical experience in drug stores where physicians' prescriptions are compounded:

Thirty months for graduates of the two-year course.

Twenty-one months for graduates of the three-year course.

Twelve months for graduates of the four-year course.

For detailed information apply to the State Board of Pharmacy.

An adjunct to the Pharmaceutical Society has been established, of which the aim is to secure positions for graduates, and clerks for employers who are graduates of the School. At present the demand for clerks is greater than the supply. Applications for positions should be placed with the Secretary of the Faculty.

The School of Pharmacy occupies the first two floors and basement of the east wing of the Chemistry and Pharmacy Building. The building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, bacteriology, botany, mineralogy, physiology, and physics.

APPARATUS. For the various practical courses offered by this School a large amount of laboratory apparatus of domestic and foreign types, is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States Pharmacopœia can be made by any of the official methods; and, in addition, appliances and materials are at hand for the unofficial and extra-pharmacopœial products.

The lecture table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Care has been taken to illustrate pharmacy in all its phases.

COLLECTIONS. The Pharmacy School possesses an extensive herbarium of medical plants, together with a collection of photographs representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscope slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal sections, as well as in powdered form; also a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest, several cases of crystal models, an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collections of particular interest.

LIBRARY. The School possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany, and France.

For the convenience of students in chemistry and pharmacy, a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where the principal reference books and periodicals may be found.

THE CURRICULUM.

Three definite curricula are provided:

THE TWO-YEAR CURRICULUM is confined to pharmaceutical work and is designed to meet the requirements of those students who have had one or more years of experience in a drug store and who wish to further qualify themselves for the work of the retail pharmacy.

THE THREE-YEAR CURRICULUM is indorsed by the Kansas Pharmaceutical Association and is especially recommended to those students who have had no drug-store experience. Special opportunities are offered in this course for work in the field of drug standardization and analysis.

THE FOUR-YEAR CURRICULUM prepares the student for graduate work. It is especially recommended to all who aim to be food and drug analysts, municipal chemists, biological chemists, sugar chemists, etc.; and allows a liberal choice of electives in the physical, chemical, and biological groups.

Connected with the School of Pharmacy is the state laboratory for drug analysis, which affords unusual opportunities for those who are especially interested in governmental and state positions.

Choice of Electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

Requirements for Graduation. Students desiring to graduate from the four-year curriculum are required to be in residence and regularly registered in the School of Pharmacy during their Senior year, and to have completed the prescribed courses of study with a minimum of 130 hours total credit, including electives, and with grade of I or II in at least 80 hours.

TWO- AND THREE-YEAR SCHEDULE.

FIRST YEAR.

FIRST SEMESTER.

| <i>Course.</i> | <i>Time.</i> | <i>Hours credit.</i> |
|---------------------------------|----------------------------|----------------------|
| Introductory Pharmacy | 9:30-10:30, Tu., Th..... | 2 |
| Pharmaceutical Arithmetic | 9:30-10:30, M., W., F..... | 3 |
| Pharmacal Botany | 10:30-12:30 | 5 |
| Elementary Chemistry* | 1:30- 3:30 | 5 |

SECOND SEMESTER.

| | | |
|------------------------------------|---------------------------|---|
| Pharmacognosy | 8:30-10:30 | 5 |
| Official Pharmacy | 10:30-11:30, Tu., Th..... | 2 |
| Inorganic Medicinal Chemicals..... | 10:30-12:30, M., W..... | |
| | 11:30-12:30, F..... | 3 |
| Qualitative Analysis | 1:30- 3:30 | 5 |

SECOND YEAR.

FIRST SEMESTER.

| | | |
|--------------------------------|------------------------------|---|
| Pharmaceutical Chemistry | 8:30-10:30 | 5 |
| Materia Medica I..... | 11:30-12:30, M., Tu., Th.... | 3 |
| Manufacturing Pharmacy | 1:30- 4:30 | 8 |

SECOND SEMESTER.

| | | |
|---|--------------------------------|---|
| Prescription Practice | 8:30-10:30 (a) | 2 |
| Physiology and Pharmacology | 8:30-10:30 (b) | 3 |
| Materia Medica and Pharmacology II..... | 10:30-11:30, M., Tu., W., Th., | 4 |
| Toxicology | 11:30-12:30, F..... | 1 |
| Drug Store Management..... | 11:30-12:30, Tu..... | 1 |
| General Review of Pharmacy..... | 11:30-12:30, Th..... | 1 |
| Organic Chemistry | 1:30- 3:30 | 5 |

COURSES OF STUDY.

9

THIRD YEAR.

FIRST SEMESTER.

| | | |
|--|------------|---|
| Microanalysis of Drugs, Spices, etc..... | 8:30-10:30 | 5 |
| Bacteriology | 1:30- 3:30 | 5 |
| Rhetoric I | | 3 |
| German I | | 5 |

SECOND SEMESTER.

| | | |
|-------------------|--|----|
| Elective† | | 10 |
| Rhetoric II | | 2 |
| German II | | 5 |

FOUR-YEAR SCHEDULE.

FRESHMAN YEAR.

FIRST SEMESTER.

| <i>Course.</i> | <i>Time.</i> | <i>Hours credit.</i> |
|-----------------------------|----------------------|----------------------|
| Introductory Pharmacy | 9:30, Tu., Th..... | 2 |
| Rhetoric I | 9:30, M., W., F..... | 3 |
| Pharmaceutical Botany | 10:30-12:30 | 5 |
| Elementary Chemistry | 1:30- 3:30 | 5 |

SECOND SEMESTER.

| | | |
|----------------------------|-----------------------|---|
| German I or French I..... | 8:30 | 5 |
| Rhetoric 2 | 9:30, Tu., Th. | 2 |
| Official Pharmacy | 10:30, Tu., Th..... | 2 |
| Mathematics 2 | 10:30, M., W., F..... | 3 |
| Qualitative Analysis | 1:30-3:30 | 5 |

SOPHOMORE YEAR.

FIRST SEMESTER.

| | | |
|---------------------------------|----------------------|---|
| German 2 or French 2..... | 8:30 | 5 |
| Pharmaceutical Arithmetic | 9:30, M., W., F..... | 3 |
| Mathematics 3 | 9:30, Tu., Th..... | 2 |
| Quantitative Analysis | 10:30-12:30 | 5 |

SECOND SEMESTER.

| | | |
|------------------------------------|-----------------------------|---|
| Pharmacognosy | 8:30-10:30 | 5 |
| Inorganic Medicinal Chemicals..... | 10:30-12:30, M., W., F..... | 3 |
| Organic Chemistry | 1:30- 3:30 | 5 |
| Elective* | | 5 |

JUNIOR YEAR.

FIRST SEMESTER.

| | | |
|---------------------------|------------------------------|---|
| Elective* | | 5 |
| German 3 or French 3..... | 9:30 | 5 |
| Materia Medica I..... | 11:30-12:30, M., W., Th..... | 3 |
| Bacteriology I | 1:30- 3:30 | 5 |

SECOND SEMESTER.

| | | |
|---|--------------------------------|---|
| Elective* | | 5 |
| Organic Materia Medica and Pharmacology II..... | 10:30-11:30, M., Tu., W., Th., | 4 |
| Toxicology | 11:30-12:30, F. | 1 |
| Physics 5 (b)..... | 1:30- 3:30, Tu., Th. | 2 |
| Physics 5 (a)..... | 2:30, M., W., F. | 3 |

SENIOR YEAR.

FIRST SEMESTER.

| | | |
|------------------------------|------------------|----|
| Elective† | | 10 |
| Thesis | 10:30 | |
| Manufacturing Pharmacy | 1:30- 4:30 | 8 |

SECOND SEMESTER.

| | | |
|---------------------------------|------------------|--------|
| Prescription Practice (a) | 8:30-10:30 | 2 |
| Elective* | | 7 |
| Biological Chemistry | 1:30- 4:30 | 4 or 6 |
| Completion of Thesis..... | | |

* Students presenting chemistry for entrance are required to elect in place of Chemistry I, 5 hours from the physical science group. Chemistry II is recommended.

† In the choice of electives the student is required to confer with his faculty adviser.

‡ A student may not elect more than eighteen hours in each semester without special permission from the Faculty. Choice of electives should be tentatively made and submitted to the Faculty by the beginning of the Junior year.

DESCRIPTION OF COURSES.*

ANATOMY.

Professor SUNDWALL.
Associate Professor COGHILL.

7M.—HISTOLOGY AND SPLANCHNOLOGY. Five hours credit. A brief course on the structure of the cell, followed by a systematic study of the structure of organs. Coghill, and assistants.

BACTERIOLOGY.

Professor BILLINGS.
Assistant Professor SHERWOOD.
Assistant Professor CLAWSON.
Mr. YOUNG, Director of Water Survey.

1.—GENERAL BACTERIOLOGY. Five hours credit. Both semesters; first semester, two sections, 10:30 to 12:30, and 1:30 to 3:30; second semester, 8:30 to 10:30, and 10:30 to 12:30. Lectures and laboratory work. The lectures are largely illustrated, and treat problems connected with general bacteriology and with the relation of bacteria to public health. The laboratory work deals with the preparation of media, with cultural methods, and with diagnostic tests. Prerequisite, chemistry 1, or equivalent. Fee, \$5. Billings, Clawson, and Sherwood.

53.—BACTERIOLOGY OF FOODS. Three hours credit. Second semester; 1:30 to 3:30. Examination of milk, oysters, meats, etc. Reviews of literature pertaining to food bacteriology. Prerequisite, course 1. Fee, \$3. Clawson.

54.—SPECIAL METHODS IN BACTERIOLOGY. Five hours credit. First semester, 10:30 to 12:30. The laboratory work embraces the use of special media, the preparation of vaccines, and diagnostic technic such as that used in a public-health laboratory. Methods in sanitary water analysis constitute a part of the course. Prerequisite, course 1. Fee, \$5. Sherwood.

55.—BACTERIOLOGY OF SOILS. Two hours credit. Second semester, 1:30 to 3:30. A laboratory study of the influence exerted by bacteria on the composition of soil. Clawson.

56.—ADVANCED WATER ANALYSIS. Three hours credit. Second semester, 8:30 to 10:30. Laboratory study and assigned reading. Special attention is given to the bacteriology of water purification. The course will include a study of the organisms that produce water-borne diseases. Young.

57.—IMMUNITY. Five hours credit. Second semester, 1:30 to 3:30. Laboratory work comprises a study of precipitins, agglutinins, bacteriolyins, antitoxins, anaphylaxis, and complement fixation. Prerequisite, course 1. Fee, \$5. Sherwood.

* C., E. or M., before the number of the course indicates that it is offered by the College, School of Engineering, or School of Medicine, respectively.

Courses numbered from 1 to 49 are Freshman and Sophomore courses; from 50 to 99 are Junior and Senior courses; from 100 to 149 are offered only in the Graduate School; from 150 to 200 are Junior and Senior as well as Graduate courses.

DAYS OF MEETING. Courses giving five hours credit meet daily from Monday to Friday, inclusive.

Courses giving three hours credit meet on Monday, Wednesday, and Friday, unless otherwise specified.

Courses giving two hours credit meet on Tuesday and Thursday, unless otherwise specified.

61.—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to ten hours credit. Either semester, by appointment. Special work along some definite line, with a view to obtaining familiarity with a particular kind of laboratory procedure. Prerequisite, course 1. Fee, \$1, for each hour of enrollment. Billings and the instructor directly concerned.

BIOCHEMISTRY.

Associate Professor NELSON.
Mr. WILLIAMS.

50.—BIOLOGICAL CHEMISTRY. Four or six hours credit. Second semester, M., W., 1:30 to 4:30; F., 1:30 to 5:30, Tu., Th., 1:30 to 2:30. A course embracing a fundamental study of the chemistry of epithelial, connective, muscular, and nervous tissues. A study of enzymes and enzyme action, proteins, fats and carbohydrates. The qualitative and quantitative composition of milk, saliva, blood, bile, peptic and pancreatic juices. Designed to meet the needs of pharmacists and those pursuing courses in food analysis, hygiene, and home economics. Required in the four-year pharmacy course. Open as elective for others having necessary prerequisites. Nelson and Williams.

52.—URINALYSIS. Two hours credit. Elective. Second semester, hours by appointment. The qualitative and quantitative examination of normal and pathological urine. Nelson and Williams.

51.—ADVANCED BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year. Conferences and reports on selected topics. Nelson.

53.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the applications of colloid chemistry to problems in biochemistry. Nelson.

101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year. Nelson.

102.—BIOCHEMICAL SEMINAR (for graduates only). Weekly meetings. Prerequisites, a reading knowledge of French and German. Discussion and reports on current biochemical literature. Nelson.

BOTANY AND PHARMACOGNOSY.

Professor SAYRE.
Professor STEVENS.
Assistant Professor STERLING.

1.—PLANT HISTOLOGY AND GENERAL MORPHOLOGY. Five hours credit. First semester, 10:30 to 12:30. A study of plant tissues, histological technique; the general forms of the flowering plants, and the preparation and preservation of specimens. Laboratory work, lectures, and recitations. Sterling.

2.—PHARMACOGNOSY. Five hours credit. Second semester; M., W., F., 8:30 to 10:30; Tu., Th., 9:30 to 10:30. An introduction to taxonomy; a study of the geographical distribution, origin and physical characteristics of crude vegetable drugs, and elementary technique in the examination of powdered drugs. Laboratory work, lectures, and recitations. Prerequisite, course 1 or course 6. Sterling.

51.—MICROANALYSIS OF POWDERED DRUGS AND FOODS. Five hours credit. First semester, 8:30 to 10:30. Methods in sectioning and staining, the preparation of powders, and microscopical examination. Laboratory work, lectures, and recitations. Prerequisite, course 2. Sterling.

52.—ADVANCED WORK IN MICROANALYSIS OF DRUGS AND FOODS. Two, three, or five hours credit. First or second semester, by appointment. A course designed to meet the needs of students preparing to be drug and

food analysts. Method in plant histology; microchemical technique, and quantitative determination of adulterants. Laboratory work and recitations. Sterling.

2C.—THE LIVING PLANT, WHAT IT TEACHES ABOUT LIFE AND ITS USES. Five hours credit. First semester, 8:30 to 9:30; second semester, 8:30 to 9:30 and 9:30 to 10:30. This course, or its equivalent in other schools, is a prerequisite to course 6. Recitations, demonstrations, and lectures. Stevens.

4C.—PLANT HISTOLOGY. Five hours credit. First semester, Tu., Th., 9:30 to 10:30; M., W., F., 9:30 to 11:30. A study of plant tissues with special reference to their development and function; plant products, their physiological and biological significance; histological technique. Laboratory work, six hours a week, recitations, and lectures. Prerequisites, course 1 in the College, course 2 in the College, course 1 in the School of Pharmacy, or its equivalent. Stevens.

CHEMISTRY.

Professor BAILEY.
 Professor CADY.
 Professor DAINS.
 Associate Professor WHITAKER.
 Associate Professor ALLEN.
 Assistant Professor YOUNG.
 Assistant Professor FARAGHER.
 Assistant Professor STRATTON.
 Assistant Professor LONG.

1.—ELEMENTARY CHEMISTRY. Five hours credit. First semester, 1:30 to 3:30; second semester, 10:30 to 12:30. Recitations, lectures, and laboratory work. Students presenting chemistry for admission to the College are not admitted to this course for credit. Stratton and assistants.

2.—INORGANIC CHEMISTRY. Five hours credit. First semester. Lecture, M., at 8:30; recitations, W. F., at 8:30 or 9:30. Laboratory, Tu. Th., 8:30 to 10:30, or 1:30 to 3:30. Prerequisite, course 1. Cady and Faragher.

3.—QUALITATIVE ANALYSIS I. Five hours credit. Second semester. Lectures and recitations, Tu. Th., 8:30 or 9:30. Laboratory, M. W. F., 8:30 to 10:30, or 1:30 to 3:30. Prerequisite, course 2. Cady and assistants.

50.—QUALITATIVE ANALYSIS II. Three hours credit. Second semester, 8:30 to 10:30. An advanced course, especially on the rare metals. Prerequisite, course 3. Cady.

51.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours credit. Second semester, at 11:30. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisites, courses 1, 2, 3. Whitaker and Parkhurst.

52.—ORGANIC INDUSTRIAL CHEMISTRY. Two hours credit. First semester, at 9:30. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisites, courses 1, 2, 3, 4. Whitaker and Parkhurst.

53.—CHEMISTRY OF FOOD PRODUCTS. Five hours credit. First semester, 3:30 to 5:30. A study of food supply, its composition, preparation, and adulteration. Lectures, recitations, and laboratory work. Bailey's Source Chemistry and Use of Food Products. Prerequisite, course 1. Bailey.

54.—QUANTITATIVE ANALYSIS I. Five hours credit. First semester, 10:30 to 12:20; or 3:30 to 5:30; or second semester, 10:30 to 12:20, or 1:30 to 3:30. Prerequisite, course 3. Allen and assistants.

55.—QUANTITATIVE ANALYSIS II. Two, three, or five hours credit. Either semester, 1:30 to 3:30, or by appointment. In connection with this work some specialty, such as chemistry of the cement industry, of the glass industry, of the packing-house industry, sugar chemistry, iron analysis, gas analysis, or rock analysis, can be pursued. Prerequisite, course 54. Allen.

56.—SANITARY WATER ANALYSIS. Five hours credit. Both semesters, 8:30 to 10:30. Part of the course will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the course will be spent in chemical quantitative analysis of water and sewage, and interpretation of results of sanitary tests. Prerequisite, chemistry 3. Young and Bruckmiller.

58.—FOOD ANALYSIS. Two, three, or four hours credit. Both semesters, by appointment. Must be preceded by courses 1, 2, 3 and 54. Long and Estes.

59.—ORGANIC CHEMISTRY. A. Five hours credit. Both semesters, 1:30 to 3:30. Prerequisite, ten hours chemistry. Open to college and medical students. Dains and assistants.

B. First semester, 1:30 to 3:30. For college and engineering students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 2, for which it is a prerequisite. Dains and assistants.

60.—ORGANIC CHEMISTRY II. A continuation of course 59B. Five hours credit. Second semester, 3:30 to 5:30. In this course the aromatic and other cyclic compounds are discussed. Dains and assistants.

64.—PHYSICAL CHEMISTRY I. Five hours credit. First semester, at 10:30. A course paying special attention to electrochemistry. Lectures, recitations and laboratory work. Prerequisites, courses 3 and general physics and calculus. Cady and assistants.

65.—PHYSICAL CHEMISTRY II. Five hours credit. Second semester, at 10:30. A general course in theoretical and physical chemistry. Lectures, recitations, and laboratory work. Prerequisites, courses 1, 2, 3, 4, 54, general physics, and calculus. Cady and assistants.

ENGLISH LANGUAGE AND LITERATURE.

Associate Professor RAYMOND.
Mr. McCARTY.
Miss LAIRD.

1E.—RHETORIC I. Three hours credit. First semester, M. W. F., 8:30, 9:30, 10:30, 11:30, 2:30, 3:30. Written exercises and papers, with study of language usage. McCarty.

2.—RHETORIC II. Two hours credit. Second semester, Tu. Th., 8:30, 9:30, 10:30, 11:30, 2:30, 3:30. Continuation of course 1. McCarty.

59.—ADVANCED COMPOSITION. Three hours credit. First semester, 8:30; second semester, 9:30. Optional, Junior or Senior year. Associate Professor Raymond.

FRENCH.

Professor GALLOO.
 Associate Professor NEUENSCHWANDER.
 Assistant Professor WARD.
 Assistant Professor COWPER.
 Assistant Professor SKIDMORE.
 Miss GARDNER.
 Miss STANTON.
 Mr. APPELBOOM.

1.—ELEMENTARY FRENCH I. Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30; second semester, 8:30, 9:30, 11:30, 2:30. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation, accidence, and elementary syntax. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 8:30. NeuenSchwander, Ward, Cowper, Skidmore, Stanton, Appelboom.

2.—READING AND GRAMMAR. Five hours credit. Second semester, 8:30, 9:30, 10:30, 11:30, 1:30; first semester, 8:30, 10:30, 2:30. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. NeuenSchwander, Ward, Cowper, Skidmore, Stanton, Appelboom.

5.—SCIENTIFIC FRENCH. Three hours credit. First semester, by appointment. Open to students who are specializing in the sciences and who need an accurate and ready understanding of scientific French. Prerequisites, courses 1 and 2. Gardner.

51.—ELEMENTARY FRENCH I. Five hours credit. First semester, 10:30. For Juniors and Seniors who are beginning French. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with French and wider reading than in the usual elementary courses for Freshmen and Sophomores. Galloo.

52.—FRENCH READING AND GRAMMAR. Five hours credit. Second semester, 10:30. A continuation of course 51. Galloo.

GEOLOGY.

Professor HAWORTH.
 Associate Professor TWENHOFEL.
 Assistant Professor TODD.

1.—ELEMENTARY GEOLOGY. Five hours credit. Each semester, daily, 8:30, 9:30, 10:30, 2:30. A study of the elementary principles of geology, including a general outline of geologic principles and geologic agencies. An acquaintance with the elements of chemistry, zoölogy, and botany will be of advantage in this course. Todd and Twenhofel.

GERMANIC LANGUAGES AND LITERATURES.

Professor ENGEL.
 Professor THURMAN.
 Associate Professor CORBIN.
 Associate Professor KRUSE.
 Assistant Professor BRIGGS.
 Assistant Professor STURTEVANT.
 Miss WILSON.
 Miss JONES.
 Miss PALMER.
 Mrs. SPANGLER.
 Mr. PALMBLAD.
 Miss HOCHDÖRFER.
 Mr. HAWKINS.

1.—GERMAN GRAMMAR AND READER. Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30 to 3:30; second semester, 8:30, 10:30, 11:30, 1:30. Engel, Thurman, Kruse, Wilson, Jones, Palmer, Spangler, Palmblad, Hochdörfer, Hawkins.

2.—GERMAN READER AND TEXTS. Five hours credit. First semester, 9:30, 10:30, 1:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30, 2:30. Kruse, Wilson, Jones, Palmer, Palmblad, Hochdörfer, Hawkins.

3.—MINNA VON BARNHELM OR WILHELM TELL. Five hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30, 3:30; second semester, 9:30, 10:30, 11:30, 1:30. Corbin, Sturtevant, Wilson, Palmer, Spangler, Palmblad, Hochdörfer.

4.—SCHILLER'S JUNGFRAU VON ORLEANS, AND SELECTED TEXTS. Five hours credit. First semester, 8:30, 9:30, 11:30, 2:30; second semester, 8:30, 9:30, 11:30, 2:30. Outline of German literature. Composition and conversation. Thurman, Sturtevant, Wilson, Jones, Palmer, Spangler, Hochdörfer.

6.—SCIENTIFIC GERMAN. Three hours credit, second semester, at 9:30. Introductory reading of Lassar-Cohn's *Die Chemie im täglichen Leben*, and Blochmann's *Luft, Wasser, Licht, and Wärme*. The purpose of this course is to develop rapid and intelligent reading of scientific German. Briggs.

MATHEMATICS.

Professor VAN DER VRIES.
Professor ASHTON.
Associate Professor MITCHELL.
Assistant Professor STOUFFER.
Mr. HOLZINGER.
Mr. STEIMLEY.

2.—COLLEGE ALGEBRA. Three hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, and 1:30. Rapid review of elementary algebra; graphic representation; logarithms; determinants; theory of equations; Horner's method of approximation. Stouffer, Holzinger, and Steimley.

PLANE TRIGONOMETRY. Two hours credit. First semester, 8:30, 9:30, 10:30, 11:30, 1:30, 2:30, 3:30; second semester, 8:30, 9:30, 10:30, 11:30, 1:30. The six trigonometric functions; principal formulas of plane trigonometry, trigonometric equations, solution of triangles and practical problems. Stouffer, Holzinger, and Steimley.

4.—ANALYTICAL GEOMETRY I. Two hours credit. First semester, 10:30 and 11:30; second semester, 8:30 and 10:30. The straight line, circle, elements of parabola, ellipse, and hyperbola. Prerequisites, courses 2 and 3. Van der Vries.

5.—CALCULUS I. Three hours credit. First semester, 10:30; second semester, 8:30, 10:30. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates. Open to students who have completed or are taking course 4. Mitchell.

6.—ANALYTICAL GEOMETRY II. Two hours credit. First semester, 11:30; second semester, 10:30. Conic sections; polar coördinates; loci problems; higher plane curves. Prerequisite, course 4. Ashton.

7.—CALCULUS II. Three hours credit. First semester, 11:30; second semester, 10:30. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Prerequisites, courses 5 and 6; may be taken at the same time with course 6. Mitchell.

PHARMACY AND MATERIA MEDICA.

Professor SAYRE.
Professor HAVENHILL.
Professor BAILEY.

1.—INTRODUCTORY PHARMACY. Two hours credit. First semester, Tu. Th., 9:30. Lectures and recitations. The history of the Pharmacopœia and a study of the apparatus and processes employed in the preparation of medicines. Havenhill.

2.—PHARMACEUTICAL ARITHMETIC. Three hours credit. First semester; M. W. F., 9:30. A study of weights, measures, specific gravity, and the principles of pharmaceutical arithmetic. Lectures and recitations. Havenhill.

3.—OFFICIAL PHARMACY. Two hours credit. Second semester, Tu. Th., 10:30. A systematic study of the official preparations, including their classifications, preparation, and preservation. Must be preceded by course 1. Lectures and recitations. Havenhill.

4.—INORGANIC MEDICINAL CHEMICALS. Three hours credit. Second semester, M. W. F., 10:30. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and laboratory work. Must be preceded by introductory chemistry. Havenhill.

5.—GENERAL REVIEW OF PHARMACY. One hour credit. Senior; second semester, Th., 11:30. A synoptic review of the essentials of pharmacy, chemistry, and materia medica. Havenhill.

6.—DRUG STORE MANAGEMENT. One hour credit. Senior; second semester, Tu., 11:30. A lecture course with collateral reading relating to the legal and business problems confronting the retail pharmacist. Sayre, Havenhill, Nelson, Watson, and invited lecturers.

7.—LIBRARY WORK. Hours by appointment, second semester (b). Specially designed to familiarize the student with pharmaceutical literature; will include exercises in indexing and reviewing. Sayre.

8.—Manufacture of artificial fruit essences and other compound ethers. Sayre.

9.—PHARMACEUTICAL JURISPRUDENCE. Hours by appointment. A study of the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society.

10.—ELEMENTARY ACCOUNTING. Hours by appointment. A course of lectures covering the principles of accounting applicable to the business of pharmacy. Given under the supervision of the Department of Economics and Commerce.

11.—INTRODUCTORY PHARMACOLOGY. One or two hours credit. First semester. A course designed for medical students, embracing metrology, and the processes and apparatus used in the preparation of medicines, including the elements of prescription writing and a brief outline of the official preparations. Havenhill.

50.—MANUFACTURING PHARMACY. Eight hours credit. Senior; first semester, 1:30 to 4:30. Practical work in the manufacture of standard medicinal preparations, as contained in the Pharmacopœia and National Formulary. Laboratory work and recitations. Must be preceded by Pharmacy 1, 2, 3, 4, and Botany 1. Havenhill.

51.—PRESCRIPTION PRACTICE. Two hours credit. Senior; second semester, (a) 8:30 to 10:30. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Prerequisite, course 50. Havenhill.

52.—MATERIA MEDICA I. Three hours credit. Senior; first semester, 11:30. A critical study of the drugs and preparations of the U. S. Pharmacopœia and National Formulary. Lectures and recitations. Sayre.

53.—ORGANIC MATERIA MEDICA AND PHARMACOLOGY II. Four hours credit. Senior; second semester (a and b), M. Tu. W. Th., 10:30. The classification, physical description and chemical constitution of the crude drugs of the pharmacopœias; their chemical and physiological properties, and therapeutic application; methods of prescribing and dispens-

ing; the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Sayre.

54.—TOXICOLOGY. One hour credit. Senior; second semester, F., 11:30. Lectures on the sources, properties, methods of detection, and antidotes for poisons. Must be preceded by fifteen hours of chemistry. Bailey.

55.—THESIS. Five hours credit. Senior; second semester. Original research in one of the subjects connected with the pharmaceutical profession. An outline of the work should be presented to the Dean by the first of the second semester.

PHARMACEUTICAL CHEMISTRY.

Professor SAYRE.
Professor HAVENHILL.
Associate Professor NELSON.

1.—PHARMACEUTICAL CHEMISTRY. Five hours credit. First semester, 8:30 to 10:30. A course embracing the fundamental analytical operations necessary in determining the strength and purity of drugs and medicines. Nelson.

2.—PLANT ANALYSIS. Two and one-half or five hours credit. Elective. Either semester, by appointment. The separation and estimation of the proximate principles of plants. Must be preceded by chemistry 4 and 54, or chemistry 4 and pharmaceutical chemistry 1. Sayre, Havenhill.

3.—ANALYSIS OF NOSTRUMS. Five hours credit. Elective. Either semester, by appointment. Must be preceded by pharmaceutical chemistry 3. Sayre.

50.—ANALYSIS OF DRUGS. Five hours credit. Elective. Either semester, by appointment. This is a companion course to food analysis (see chemistry 58) and is arranged especially for students who desire to qualify as food and drug analysts. Must be preceded by chemistry 4 and 54, or chemistry 4 and pharmaceutical chemistry 1. Havenhill.

PHYSICS AND ASTRONOMY.

Professor KESTER.
Associate Professor RICE (M. E.).
Assistant Professor STIMPSON.
Assistant Professor SMITH (T. T.).
Mr. WHITTEMORE.

1.—ELEMENTARY PHYSICS. Five hours credit. First semester, M. W. F., 9:30, and Tu. Th., 8:30 to 10:30. A first course in physics, intended to give a brief survey of the subject. Recitations and laboratory, with some lectures and problems. Prerequisites, algebra and plane geometry. Not open for credit to students having credit in entrance physics. Stimpson.

5a.—GENERAL PHYSICS I. Three hours credit. Second semester, M. W. F., 2:30. Mechanics, sound, and light. Lectures, recitations, and problems. Prerequisites, a first course in physics and some knowledge of plane trigonometry. Course 5a should be accompanied by 5b. Kester, Smith, and Whittemore.

5b.—GENERAL PHYSICS LABORATORY I. Two hours credit. Second semester, Tu. Th., 1:30 to 3:30, or Sa., 8 to 12. Mechanics, sound, and light. Coördinate with 5a, with the same prerequisites. Course 5b must be accompanied by or preceded by 5a. Smith and Whittemore.

6a.—GENERAL PHYSICS II. Three hours credit. First semester, M. W. F., 2:30. Heat and electricity. A continuation of course 5, with the same prerequisites. It is desirable that physics 5 precede this course, though not necessary. Course 6a should be accompanied by 6b. Kester, Smith, and Whittemore.

6b.—GENERAL PHYSICS LABORATORY II. Two hours credit. First semester, Tu. Th., 1:30 to 3:30, or Sa., 8 to 12. Heat and electricity. Coördinate with 6a, with the same prerequisites. Course 6b must be accompanied by or preceded by 6a. Smith and Whittemore.

PHYSIOLOGY AND PHARMACOLOGY.

Professor MATTHEWS.

M1.—PHYSIOLOGY. Five hours credit. Second semester. Lectures and recitations, three hours a week; laboratory work, six hours a week (8:30 to 10:30). Physiology of the blood, circulation, respiration, muscles, secretions, and metabolism. Mathews.

M7.—PHARMACOLOGY. Three hours credit. Second semester. The physiological actions of chemical substances (experimental pharmacology). Lectures and recitations, three hours a week; laboratory work, four hours a week. Mathews.

CORRESPONDENCE COURSES.

Through the Correspondence-Study Department of the Extension Division, the School of Pharmacy offers (1) courses for those who wish to become registered assistant pharmacists or registered pharmacists; (2) a program of studies indorsed by the Kansas State Board of Pharmacy, and leading to a correspondence certificate; (3) technical courses in introductory pharmacy, organic materia medica, and pharmacy physiology, which may under certain conditions count toward the degree of B. S.

For details, see University Extension Division announcements, under "Pharmacy."

FOOD AND DRUG ANALYSIS.

The legislature in 1905 passed a bill making it the duty of the chemistry departments of the University and the State Agricultural College, under the direction of the State Board of Health, to make analyses of samples of foods and beverages collected by any county or city board of health of the state of Kansas and to make reports upon the same.

For details of the work, see Section XII of the Catalog.

For *The Pharmaceutical Society*, see General Information Section of Catalog, under "University Organizations."



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION VIII
THE SCHOOL OF MEDICINE**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

| | |
|--|-------------------|
| MR. ED. T. HACKNEY, <i>President</i> , Wellington..... | Term expires 1917 |
| MR. EDWARD W. HOCH, Marion..... | Term expires 1919 |
| MRS. J. M. LEWIS, Kinsley..... | Term expires 1917 |
| MR. LEE HARRISON, <i>Secretary</i> , Cherokee. | |

FACULTY.

FRANK STRONG, Ph. D., President.
SAMUEL JAY CRUMBINE, M. D., Dean.
MERVIN TUBMAN SUDLER, Ph. D., M. D., Associate Dean and Professor of Surgery.
EDGAR HENRY SUMMERFIELD BAILEY, Ph. D., Professor of Chemistry.
LUCIUS ELMER SAYRE, Ph. M., Professor of Pharmacy.
L. D. HAVENHILL, B. S., Professor of Pharmacy.
DON CARLOS GUFFEY, M. D., Professor of Obstetrics and Gynecology.
JOHN SUNDWALL, Ph. D., M. D., Professor of Anatomy.
LINDSEY STEPHEN MILNE, M. D., Professor of Medicine.
BENNET MILLS ALLEN, Ph. D., Professor of Zoölogy.
SAMUEL ALEXANDER MATTHEWS, M. D., Professor of Physiology and Experimental Pharmacology.
FRANK BURNETT DAINS, Ph. D., Professor of Chemistry.
RALPH HERMAN MAJOR, M. D., Professor of Pathology and Bacteriology.
JACOB BLOCK, M. D., Professor of Genito-urinary Surgery.
S. S. GLASSCOCK, M. D., Professor of Psychiatry.
JOHN WALTER PERKINS, M. D., Professor of Surgery.
JOSEPH E. SAWTELL, M. D., Professor of Rhinolaryngology.
ISADORE JULIUS WOLF, M. D., Professor of Medicine.
FRANKLIN E. MURPHY, M. D., Professor of Clinical Medicine.
LYMAN L. UHLS, M. D., Professor of Psychiatry.
ZACHARIAH NASON, M. D., Professor of Clinical Obstetrics.
EDWARD JAMES CURRAN, M. D., D. Ophth., Professor of Ophthalmology.
PETER THOMAS BOHAN, M. D., Professor of Clinical Medicine.
GEORGE M. GRAY, M. D., Professor of Clinical Surgery.
JESSE E. HUNT, M. D., Professor of Medicine (Pediatrics).
WILLIAM WADDELL DUKE, M. D., Professor of Experimental Medicine.
GEORGE ELLETT COGHILL, Ph. D., Associate Professor of Anatomy.
C. FERDINAND NELSON, Ph. D., Associate Professor of Physiological Chemistry.
ARTHUR E. HERTZLER, Ph. D., M. D., Associate Professor of Surgery.
WILLIAM F. KUHN, M. D., Adjunct Professor of Psychiatry.
WILLIAM L. MCBRIDE, M. D., Associate Professor of Dermatology.
WILLIAM KIRK TRIMBLE, M. D., Associate Professor of Medicine.
JOHN N. SCOTT, M. D., Associate Professor of Electro-Therapeutics.
WALTER S. SUTTON, A. M., M. D., Associate Professor of Surgery.
ANDREW L. SKOOG, M. D., Associate Professor of Neurology.
RICHARD L. SUTTON, M. D., Associate Professor of Dermatology.

- CHARLES CLINTON CONOVER, M. D., Associate Professor of Clinical Medicine.
- WILLIAM J. V. DEACON, Associate Professor of Preventive Medicine.
- ORVAL JAMES CUNNINGHAM, M. D., Associate Professor of Surgery (anesthetics).
- CHARLES A. HASKINS, B. S., Associate Professor of Sanitary Engineering.
- NADINE NOWLIN, A. M., Assistant Professor of Zoölogy.
- JOHN G. HAYDEN, M. D., Assistant Professor of Surgery.
- EDWARD PARK HALL, M. D., Assistant Professor of Rhinology.
- ROBERT DOUGLAS IRLAND, M. D., Assistant Professor of Obstetrics and Gynecology.
- EUGENE SMITH, M. D., Demonstrator in Anatomy.
- CLARENCE B. FRANCISCO, M. D., Instructor in Orthopedic Surgery.
- CLIFFORD C. NESSELRODE, M. D., Instructor in Clinical Surgery.
- JOSEPH L. McDERMOTT, M. D., Instructor in Roentgen Therapy.
- THOMAS GROVER ORR, M. D., Instructor in Surgery.
- HERBERT F. VANORDEN, M. D., Instructor in Gynecology and Obstetrics.
- FRANK RIDGE, M. D., Instructor in Medicine (physical diagnosis).
- SAM E. ROBERTS, M. D., Assistant in Otorhinology.
- VIRGIL WARREN McCARTY, M. D., Assistant in Otorhinology.
- VIVIAN STRAHAM, A. B., Technical Assistant in Anatomy.
- JOSEPH BIRD COWHERD, M. D., Assistant in Medicine (pediatrics).
- CHARLES CLAYTON DENNIE, M. D., Assistant in Dermatology.
- FRED C. RUMSEY, M. D., Assistant in Surgery.
- C. S. GILLILAND, M. D., Assistant in Surgery.
- DARWIN W. DELAP, M. D., Assistant in Clinical Medicine.
- LENA M. SMYTHE, Technical Assistant in Pathology and Bacteriology.
- S. MILO HINCH, R. N., Superintendent of Bell Memorial Hospital and Supervisor of Nurses.
- ELIZABETH TALLE, Cashier Bell Memorial Hospital.
- GRACE SCOTT, R. N., Assistant in the Operating Room.
- ETHEL M. HAINES, R. N., Assistant in the Dispensary.
- ELEANOR MAUDE KIBBEY, Secretary and Register.
- EVELYN STANTON, A. B., Librarian.

ADMINISTRATIVE COMMITTEE.

FRANK STRONG, *Chairman.*

S. J. CRUMBINE.

M. T. SUDLER.

L. E. SAYRE.

S. A. MATHEWS.

L. S. MILNE.

JOHN SUNDWALL.

R. H. MAJOR.

D. C. GUFFEY.

J. E. SAWTELL.

F. E. MURPHY.

E. J. CURRAN.

W. S. SUTTON.

W. K. TRIMBLE.

F. B. DAINS.

The School of Medicine.

HISTORY.

In the act of the legislature establishing the University (1862) the founding of a School of Medicine was contemplated, but conditions were such that it was impossible to carry out these plans at this time. However, steps were taken, as opportunity offered, to further the formation of a School of Medicine, and in 1880 the "Preparatory Medical Course," under the administration of the College, was established. This continued until 1899, when the School of Medicine was definitely organized, and the first two years of medical instruction were offered.

In the fall of 1905, the Kansas City Medical College (founded in 1869), the Medico-chirurgical College (founded in 1896), and the College of Physicians and Surgeons (founded in 1893), were merged into the last two years of a four-year medical course under direction of the University of Kansas. This was made possible through a gift to the University of some tracts of land in and about Rosedale, Kan., by Dr. Simeon B. Bell, in memory of his wife, Eleanor Taylor Bell. The work was first given in the laboratory and lecture rooms of the building which had formerly belonged to the College of Physicians and Surgeons and a dispensary was conducted in the building of the Medico-chirurgical College. In January, 1907, the school was moved to the new buildings which had been erected in Rosedale, on the land referred to above.

ORGANIZATION.

THE FACULTY. The Faculty of the School of Medicine includes members who give instruction in the work of the first year and a half at Lawrence, and those giving instruction in the work of two and one-half years at Rosedale.

THE ADMINISTRATIVE COMMITTEE. The administrative committee of the School of Medicine has charge of matters affecting the School as a whole, subject to the rules of the Board of Administration. It is made up of the Chancellor of the University, as chairman, the Dean, the Associate Dean, the professors and associate professors from Lawrence and Rosedale.

THE WORK AT LAWRENCE. The work of the first year and a half is given at Lawrence. It consists of the fundamental scientific branches, anatomy, neurology, histology, embryology, physiology, pharmacology, chemistry, bacteriology, etc. The medical students have all the advantages of the University laboratories, libraries, museums, and lectures.

Students should matriculate and register for the first year and a half at Lawrence.

THE WORK AT ROSEDALE. The work of the last half of the second year and the third and fourth years is intended largely to familiarize the student with the various manifestations of diseases and their treatment. Much of the work is done by the bedside, and the student has an opportunity to observe all the processes of making a diagnosis and prescribing the treatment.

DEGREES.

The degree of doctor of medicine is granted to those satisfactorily completing the work of the four-year medical curriculum.

Candidates for the degree of doctor of medicine may, under the plan for a six-year curriculum explained below, receive from the College of Liberal Arts and Sciences the degree of bachelor of arts, or the degree of bachelor of science in medicine.

The following plan has been arranged with the College:

College students who have attained at least full Senior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Senior year the entire first year of the medical curriculum. To such students the College will grant the degree of bachelor of arts.

College students who have attained at least full Junior standing and who have credit for certain subjects named below may offer in satisfaction of all or part of the requirements of the Junior and Senior years the entire first and second years of the medical curriculum. To such students the College will grant the degree of bachelor of science in medicine.

The subjects, or equivalents, which must have been completed before admission to the Medical School are:

Modern language, 10 hours, preferably German I and II.

Chemistry, 10 hours, including I and II.

Physics I, 5a and 5b, or 6a and 6b.

Biology, which should include zoölogy III and one course selected from zoölogy I, II, and botany III.

To secure this privilege of offering medical work towards the college degree, the student must have spent one full year in residence at the College before entering upon his medical studies, and must be certified to the Medical School by the Dean of the College as having met all the requirements above named. He must also register in the College as well as the Medical School and be subject to such general regulations of the College Faculty as govern other Juniors and Seniors.

A student who does not fully meet the entrance requirements to the Medical School will enroll in College classes necessary to complete such requirement, after which he may be admitted to the Medical School and enrolled in medical courses, but the aggregate number of hours of such enrollment in the two schools may not exceed that allowed to College students.

Whenever a student has completed the medical work in accordance with the foregoing provisions, the Dean of the Medical School will submit to the Dean of the College a certified statement of that fact accompanied by the recommendation of the Faculty of the School of Medicine that such student be admitted to the appropriate College degree. The name of the candidate will then be sent to the College Faculty as a candidate for that degree.

REQUIREMENTS FOR ADMISSION.

For entrance into the School of Medicine a student must have completed sixty hours (two years) of work in the College of Liberal Arts and Sciences of the University of Kansas, or work equivalent thereto.

The student who has completed the first two years of college work in another school, and who desires to enter the Medical School, should send a certified transcript of his work to the chairman of the committee on advanced standing, or the Registrar of the University. A rating will then be given on this work, showing under just what conditions he will be accepted by the School of Medicine.

A student may be conditioned in six hours' work, which amount can be completed in the following session of the Summer School, but this condition must be removed before the student enters upon the second year's work in the School of Medicine.

This preliminary college work must include the following:

| | |
|------------------------|-----------|
| Chemistry | 10 hours. |
| *Physics | 5 hours. |
| Biology | 10 hours. |
| German or French | 10 hours. |

For description of courses, see alphabetical list in College Section of Catalog. These or their equivalents will be accepted.

The minimum requirement in chemistry is chemistry I and II, but the student is strongly advised to include in his preliminary work a course in qualitative analysis. If time permits, some work in quantitative analysis should be done, as it affords an excellent preparation for physiological chemistry.

The physics requirements include at least 5 hours of college physics. Either 5a and 5b or 6a and 6b may be offered. Both the latter courses are highly recommended.

The minimum requirement in biology is zoölogy III (comparative anatomy) and one course selected from zoölogy I, zoölogy II, and botany III.

In languages, at least German I and II should be presented. The student, however, is strongly advised to complete German I, II, III, and French I and II. French I and II will be accepted for the minimum language requirement, but German is much preferred.

Optional Work.

For the rest of the two years' college work, courses in history, economics, and psychology are advised, in order to give the student as broad a foundation as possible for his technical studies in the Medical School.

The group requirements in the College must be fulfilled. The above-named courses, as a rule, fit in with these group requirements. *Every prospective medical student is urged to consult the Associate Dean or the Secretary of the School of Medicine in regard to this preparatory work.*

Advanced Standing.

Upon examination in those subjects for which credit is desired, advanced standing in the first and second years of the course is granted to students who have completed this work in acceptable schools.

Candidates desiring such advanced standing must submit a detailed statement of the work done by them, including their preliminary education, and for which they wish credit; such statements to be signed by the instructor in each subject or by an officer of the institution in which work was done. The last year's work must be done in this institution.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 11, 12, or 13, 1916. Registration at a later date will be permitted only on the payment of a fee of one dollar.

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean for enrollment in their classes. Enrollment the first semester occurs September 12 and 13, 1916,

* Ten hours of physics is required, but until September 1, 1917, five hours of this may be high school work, provided the character of the course is such that it is recognized by the Department of Physics of the University of Kansas.

and on the first day of the second semester. Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

In order to obtain the degree of doctor of medicine it is necessary to be regularly enrolled in the School of Medicine for at least four full years.

FEES.

First and Second Years.

| | |
|--|--------|
| Matriculation fee, for residents of the state..... | \$5.00 |
| for nonresidents. | 10.00 |
| Incidental fee, for residents of the state..... | 25.00 |
| for nonresidents. | 35.00 |
| Diploma fee, at graduation..... | 5.00 |
| Microscope fee. | 3.00 |

During the first year of the regular four-year course in medicine students who register in both the School of Medicine and the College of Liberal Arts and Sciences may pay only the College incidental fee for the first year so long as their work is taken with the expectation of using the credits for the degree of A. B. also.

Laboratory fees, to cover cost of material used, will be charged by the different departments. The amounts of these fees will average about as follows: Anatomy, \$5 per part; physiology and pharmacology, \$10; histology, \$5; embryology, \$2; neurology, \$3; chemistry, \$5 to \$8; physiological chemistry, \$3; bacteriology, \$5; pathology, \$5; making the total amount about \$60 per year for residents of Kansas, and about \$80 for nonresidents.

All laboratory fees must be paid before enrollment in classes. Receipts for the same will be required by class instructors before admitting students to class.

Third and Fourth Years.

Students who register in the department at Rosedale, not having been previously enrolled as students of the University of Kansas, are required to pay the regular matriculation fee—for residents of Kansas, \$5; for nonresidents, \$10.

In addition to the matriculation fee each student pays \$100 for each school year, \$50 at the opening of each semester. This amount includes the incidental fees of \$25 and \$35 per annum required by law, and fees to meet, in part, the necessary hospital and clinical expenses.

Students will also be required to rent a microscope (\$3 per year) and to pay the actual cost of materials and apparatus of every kind consumed, wasted, lost or broken. A stock room is provided where students may purchase any additional material needed, or they may secure the same, if they prefer, in the open market, provided the form and grade of such articles are approved by the instructor in charge.

OUTSIDE OCCUPATION. It is not advisable to attempt to carry full work in the Medical School and to engage in outside occupation. If it is necessary for students to earn a portion of their expenses while in school a longer time will be required to complete the course. Should students for any reason be unable to carry full work, they may, at the discretion of the Associate Dean, be withdrawn from certain courses.

EQUIPMENT.

LABORATORY. For the work of the first two years of the medical course at Lawrence the scientific equipment of the University is available. The University already possessed, when the Medical School was established, well-equipped laboratories for chemistry and pharmacy. In physiology and anatomy, histology, and embryology, laboratories were provided, and the equipment increased. The greater part of the work of the first two years is of a purely scientific character, and most of the student's time is spent in laboratories. The instruction is given by men who devote themselves entirely to teaching.

The Laboratory Building at Rosedale contains teaching laboratories, private laboratories for instructors, the necessary lecture rooms, morgue and specimen rooms, animal rooms, business offices, and the library. The museum contains more than one thousand specimens, preserved in Kaiserling's fluid. A sufficient number of microscopes is provided so that each student has his own equipment.

LIBRARY. The library at Rosedale is a part of the general University library and is managed as such. The files of periodicals have been carefully selected, with a view to training the student to use the best in current medical literature. There is a collection of reprints and dissertations. Carefully selected monographs and textbooks are added from year to year.

HOSPITAL. The hospital has accommodations for sixty-five patients. Clinical material is furnished, first, by free patients (the expense being met by a legislative appropriation) who are sent in from the dispensary or by the heads of the departments; second, by county cases which are sent in under the laws passed by the legislature permitting counties to send their charity cases to this hospital for treatment, the counties paying the actual expenses incurred; third by patients who can afford to pay hospital fees and who are admitted as clinical patients on presenting a letter from their family physician stating that they can not afford to pay for professional services and are recommended for free treatment.

Three internes are appointed out of every graduating class to serve in the hospital. The internes are selected by the Administrative Committee, from the applicants who have made the highest average in their work during the last two years.

DISPENSARY. The out-patient department is housed in the newly erected Dispensary Building. It is a two-story fireproof building, containing a drug room, a laboratory, a lecture room, a waiting room, and consultation rooms. It is open from 10 to 12 a. m. and from 2 to 4 p. m., Sundays and holidays excepted. Here students have an opportunity to study and examine ambulant patients under competent supervision in the clinic.

OPPORTUNITIES IN CITY HOSPITALS. Instruction is also given at St. Margaret's Hospital of Kansas City, Kan., by permission of the Sisters who control this institution. Its capacity is three hundred beds. Fourth-year students spend three mornings a week in this hospital. The school is allowed similar privileges by the authorities of Mercy Hospital, where instruction in pediatrics is given.

CURRICULUM.

FRESHMAN YEAR.

First Semester (at Lawrence) :

Anatomy 1, 2, 3, 4, 5,—Human dis-
section and Osteology.
Anatomy 7—Histology and
Splanchnology.
Organic Chemistry.

Second Semester (at Lawrence) :

Anatomy 1, 2, 3, 4—Dissection.
Anatomy 8—Embryology.
Anatomy 9—Neurology.
Physiological Chemistry.

SOPHOMORE YEAR.

First Semester (at Lawrence) :

Physiology 1.
Pharmacology—Experimental.
Materia Medica.
Bacteriology.
Toxicology.
Parasitology.

Second Semester (at Rosedale) :

Pathology 3.
Anatomy 4—Topographical.
Physiology 3—Experimental
Pharmacology.
Materia Medica, Pharmacology.
Medicine 2, 3.
Surgery 1.
Obstetrics 1.
Hygiene.

JUNIOR YEAR. (At Rosedale.)

First Semester :

Medicine 4, 5, 6.
Surgery 3, 5, 7, 9.
Obstetrics 2.
Pathology 4.
Ophthalmology 1.
Dispensary.

Second Semester :

Medicine 4, 5, 8.
Surgery 4, 7, 8, 16.
Obstetrics 4.
Ophthalmology 1.
Neurology 1.
Otorhinolaryngology 1, 2.
Orthopedic Surgery.
Pediatrics.
Hematology, Serology.
Dispensary.

SENIOR YEAR. (At Rosedale.)

First Semester :

Medicine 1, 10, 11.
Surgery 10, 13, 14.
Obstetrics 7, 8.
Medical Economics 2.
Neurology 3.
Psychiatry 4.
Pediatrics, Orthopedic.
Otorhinolaryngology 1.
Specialties—Eye, Ear, Nose,
Throat, Skin, Neurology.
Dispensary.

Second Semester :

Medicine 10, 11, 13, 14.
Surgery 11, 13, 14, 15.
Gynecology, Obstetrics 7, 8.
Neurology 2, 3.
Psychiatry 4.
Dermatology 2.
Specialties.
Dispensary.

DESCRIPTION OF COURSES.

ANATOMY.

Professor SUNDWALL.
Associate Professor COGHILL.
EUGENE SMITH, M. D., Demonstrator.
VIVIAN STRAHM, A. B., Technical Assistant.
HOMER BLINCOE, A. B., Fellow.

The department of anatomy includes gross anatomy (dissection), histology, embryology, and neurology. The laboratories are located in the basement of the Museum of Natural History, and are thoroughly equipped with apparatus, specimens, models, charts, and materials for both advanced and elementary work. For those prepared to carry advanced work and research special facilities are afforded.

By the provisions of state law there is available an abundant supply of dissecting material. Abundant material for the study of osteology is furnished. The laboratories for microscopic anatomy are well supplied with all the apparatus, chemicals, and stains essential for both elementary and research work.

In the study of the various tissues and organs special emphasis is laid on their development and gradual differentiation. A close relation always exists between the microscopic and gross anatomy, and every effort is made to teach students the unity of the two. Independent work is always emphasized.

The library receives most of the current anatomical and morphological periodicals. In addition it contains many of the more important books and monographs on anatomy and related subjects.

A fee is charged each student in anatomy, which covers the actual cost of material consumed.

Ten hours of biology (zoölogy and botany) or their equivalent are prerequisites for all courses in anatomy except introductory anatomy. The biological training should include comparative vertebrate anatomy.

COURSES OF INSTRUCTION.

INTRODUCTORY ANATOMY. A course on the structure of the human body for college students other than medical students. Five hours credit.

1, 2, 3, 4. Required of Medical Students.—The student must make a complete dissection of the human body. Atlases and textbooks are used as guides. The work in the laboratory is as independent as possible. Drawings and notes supplement the dissections. Quizzes are given by instructors on parts as completed. Credit is given only upon the completion of the work outlined and the passing of final examinations—both written and practical. Each course is supplemented by lectures bearing on the practical phases of the dissection. Sundwall, Coghill, E. Smith, Blincoe.

1.—DISSECTION OF THE ARM AND THORACIC WALL. Three hours credit. Fee, \$5.

2.—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours credit. Fee, \$5.

3.—DISSECTION OF THE THORACIC AND ABDOMINAL VISCERA. Four hours credit. Fee, \$5.

DISSECTION OF THE HEAD AND NECK. Four hours credit. Fee, \$5.

5.—HUMAN OSTEOLOGY. One hour credit. A systematic study of the human skeleton. Supplemented by drawings, clay modeling, etc. Smith.

6.—**TOPOGRAPHICAL ANATOMY.** Two hours credit. A laboratory course in human anatomy, including dissections, study of models, preparations, cross sections. The practical phases are emphasized. Courses 1, 2, 3, 4 and 5 are prerequisites. (At Rosedale.) Fee, \$5. Sundwall.

7.—**HISTOLOGY AND SPLANCHNOLOGY.** Five hours credit. A brief course on the structure of the cell, followed by a systematic study of the structure of organs. Fee, \$5. Coghill, and assistants.

8.—**EMBRYOLOGY.** Two hours credit. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Fee, \$3. Coghill, and assistants.

9.—**NEUROLOGY.** Three hours credit. Gross and microscopic anatomy of the nervous system. Fee, \$3. Coghill, and assistants.

10.—**ADVANCED WORK IN ANATOMY.** By appointment. Opportunities are given advanced students and graduate physicians for advanced work and research, both in gross and microscopic anatomy. Prerequisites, anatomy 1 to 9. Sundwall, Coghill.

11.—**SEMINAR.** Advanced students and physicians are admitted to a seminar in which subjects of current interest in anatomy are discussed. Prerequisites, anatomy 1 to 9, reading knowledge of French and German. Sundwall, Coghill.

Total hours of instruction in work required, 1008; gross anatomy, 720; neurology, 72; histology, 144; embryology, 72.

BACTERIOLOGY.

Professor BILLINGS.
Assistant Professor SHERWOOD.
Assistant Professor CLAWSON.

1.—**GENERAL BACTERIOLOGY.** Five hours credit. First semester, 3:30 to 5:30. Laboratory work with recitations and a course of lectures on the relation of bacteria to public health problems. The laboratory work deals with the preparation of media, cultural methods, diagnostic tests, preparation of vaccines, and an intimate study of important pathogenic organisms. Billings and Sherwood.

2.—**BACTERIOLOGY OF FOODS.** Five hours credit. Second semester, 1:30 to 3:30. Bacteriological examination of milk, oysters, meat, etc. Clawson.

3.—**IMMUNITY.** Five hours credit. Second semester, 10:30 to 12:30. Laboratory study of precipitins, agglutinins, bacteriolysins and complement fixation. Sherwood.

4.—**SPECIAL PROBLEMS IN BACTERIOLOGY.** Two to ten hours credit. Either semester, by appointment. Special work along some definite line with a view to obtaining familiarity with a particular kind of laboratory procedure. Sherwood.

PATHOLOGY AND BACTERIOLOGY.

Professor MAJOR.
LENA M. SMYTH, Technical Assistant.

3.—**GENERAL PATHOLOGY.** (At Rosedale.) Five hours credit. Second semester, M. W. F., 8 to 11; Tu., 8 to 10. Lectures, laboratory, and recitations. This course is devoted to the study of pathological processes, with especial emphasis on the manner in which lesions are produced, considerable time also being devoted to pathological technique. Required of second-year students. Major.

4.—**SPECIAL PATHOLOGY.** (At Rosedale.) Two hours credit. Second semester, Tu. and F., at 11. Recitations and laboratory. This course takes up the study of special pathology, as illustrated by gross and microscopic specimens. Required of third-year students. Major.

5.—POST-MORTEM PATHOLOGY. (*At Rosedale.*) Three hours credit. Both semesters. Assigned work. Each student is required to see all autopsies performed during his third year. Major.

6.—ADVANCED BACTERIOLOGY AND PATHOLOGY. (*At Rosedale.*) Open to advanced students who have had sufficient preparation. Experimental work and original research in all branches of bacteriology, pathology and immunology, arranged to suit the needs of individual students. Major.

8.—GYNECOLOGICAL PATHOLOGY. Three hours credit. First semester. This is essentially a laboratory course, in which the most important pathological lesions of the female genital tract are studied from the standpoint of gross and microscopic pathology. Required of fourth-year students. Guffey and Major.

TOTAL HOURS OF REQUIRED WORK, 433. General pathology 234, special pathology 108, *post-mortem* pathology 40, gynecological pathology 51.

ZOOLOGY.

Professor ALLEN.
Assistant Professor NOWLIN.

1.—PARASITOLOGY. Two or three hours credit. First semester; lectures, M. and W., at 1:30; laboratory, F., 1:30 o 3:30. This course deals with the animal parasites of man, and is especially designed for the needs of medical students and those interested in public-health problems. Prerequisite, 1 or equivalent. Allen and Nowlin.

ORGANIC CHEMISTRY.

Professor BAILEY.
Professor DAINS.

13.—ORGANIC CHEMISTRY. Five hours college credit. First semester, M. W. F., 1:30 to 2:30; laboratory, Tu. Th., 1:30 to 4:30. Lectures, recitations, and laboratory. A general introductory course in organic chemistry, covering the most important classes of organic compounds, with their preparation, properties, and uses. Required of students who have not completed it in the preliminary college work. Fifty-four hours lecture and recitation, 108 hours laboratory work. Dains.

BIOCHEMISTRY.

Professor SAYRE.
Associate Professor NELSON.

50.—BIOLOGICAL CHEMISTRY. Five hours credit. A survey of the field of biocehmistry adapted to the needs of medical students. Lectures, conferences, laboratory work. Prerequisites, general and organic chemistry. Lectures, Tu. Th. F., 1:30 to 2:30; laboratory work, M. W. F. afternoons. Six hours college credit. Fifty-four lectures, 162 hours laboratory work. Nelson.

51.—ADVANCED BIOLOGICAL CHEMISTRY. Conferences and reports on selected topics. Two or more hours credit. Throughout the year. Nelson.

53.—COLLOID CHEMISTRY. Two hours credit. First semester. A study of colloids and the colloidal state of matter. Special emphasis is laid on the applications of colloid chemistry to problems in biochemistry. Nelson.

101.—RESEARCH IN BIOLOGICAL CHEMISTRY. Two or more hours credit. Throughout the year. Nelson.

PHARMACOLOGY, THERAPEUTICS, AND TOXICOLOGY.

Professor SAYRE.
 Professor HAVENHILL.
 Professor BAILEY.
 Associate Professor NELSON.

The courses offered in this department are especially designed to meet the requirements of medical students, special emphasis being given to the properties, action and uses of the more important medical agents and poisons.

1.—INTRODUCTORY PHARMACOLOGY. (*At Lawrence.*) Two hours credit. First semester, W. and F., at 1:30. This course embraces the study of weights, measures, processes used in the preparation of medicines, illustrated by exercises in the pharmaceutical laboratory; prescription writing; and physical properties and identification of crude drugs. Havenhill.

2.—PHARMACOLOGY AND MATERIA MEDICA. (*At Lawrence.*) Three hours credit. First semester, at 11:30. Classification, chemical and physical properties of drugs, therapeutical application, method of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Required of second-year students. Must be preceded by course 1. Three hours, fall term, at 11:30. Sayre.

3.—PHARMACOLOGY AND MATERIA MEDICA. (*At Rosedale.*) Two hours credit. Second semester, Friday, at 11 and at 1:30. A continuation of course 2. Sayre.

4.—LABORATORY WORK IN PHARMACOLOGY. (*At Lawrence.*) The facilities for pharmaceutical investigation of a practical character are made necessary by the intimate connection of the drug laboratories with the State Board of Health. Investigation of the physiological action of drugs and chemical analysis of active (toxic) principles of drugs. By special appointment with the Dean, and department of physiological chemistry; the kind and amount of work to be arranged for. Sayre and Nelson.

5.—TOXICOLOGY. (*At Rosedale.*) One hour credit. Second semester, Friday, at 11. Lectures on the sources, properties, methods for detection, and antidotes for poisons. Bailey.

TOTAL HOURS OF INSTRUCTION, 144. Introductory pharmacology, 54, materia medica 72, toxicology 18.

PHYSIOLOGY AND PHARMACOLOGY.

Professor MATTHEWS.
 Mr. SMITH, Instructor.

EQUIPMENT. The laboratory is equipped with sufficient apparatus for the usual class demonstrations and for general laboratory work, to accommodate thirty-two students working in groups of four. Each group is given ample time to work out nearly all of the physiological processes, both normal and pathologic, capable of laboratory demonstration.

The laboratory is able to obtain an ample supply of laboratory animals for experimental and research purposes.

The required instruction in physiology extends throughout the second year, and is divided as follows:

PHYSIOLOGY I. Five hours credit. Physiology of the blood, circulation, respiration, muscles, secretion, and metabolism. First semester, lectures and recitations, three a week; laboratory work, six hours a week. Matthews.

PHYSIOLOGY II. Three hours credit. Physiology of the nervous system and the senses. Second semester, lectures and recitations, three a week; laboratory work, four hours a week. Matthews.

PHYSIOLOGY III. General and Comparative Physiology. An attempt at an interpretation of the phenomena of irritability, or the response of protoplasm in external conditions. (Elective.) Matthews.

PHYSIOLOGY AND PHARMACOLOGY IV. Research work in physiology and pharmacology. Throughout the year. Matthews.

PHARMACOLOGY VII. Three hours credit. The physiological actions of chemical substances (Experimental Pharmacology). First semester, lectures and recitations, three a week; laboratory work, four hours a week. Matthews.

MEDICINE.

Professor MILNE.
 Professor MURPHY.
 Professor WOLF.
 Professor DUKE.
 Professor BOHAN.
 Professor GLASSCOCK.
 Professor HUNT.
 Professor KUHN.
 Professor UHLS.
 Associate Professor TRIMBLE.
 Associate Professor MCBRIDE.
 Associate Professor SUTTON.
 Associate Professor CONNOVER.
 Associate Professor SKOOG.
 Mr. RIDGE, Instructor.
 Mr. COWHERD, Clinical Assistant.
 Mr. GIBSON, Clinical Assistant.
 Mr. DENNIE, Clinical Assistant.
 Mr. DELAP, Clinical Assistant.

The course in medicine begins in the second half of the second year and leads up to the individual study of clinical cases in the fourth year.

SECOND YEAR.

1.—**PHYSICAL DIAGNOSIS.** Two hours credit. Second semester, M. W., 9 to 11. The course consists of demonstrations and practical exercises illustrating the simpler methods of physical examination of the normal organs, with exposition of the physical laws involved. It includes also instruction in the recording of clinical cases. Demonstrations are also conducted in the dispensary and in the hospital for the practical study of physical signs of diseased conditions. Ridge.

2.—**LABORATORY DIAGNOSIS.** Two hours credit. Second semester, Th., 1 to 3. In this class students are trained in the methods of examining blood, sputum, and throat secretions, gastric contents, cerebrospinal fluids, urine, feces, pathological exudates, etc. Trimble.

3.—**ELEMENTARY THERAPEUTICS.** One hour credit. Second semester, F., 10 to 11. The pharmacological actions of the drugs more commonly used in medicine are discussed in relation to their application in therapeutics. Instruction is also given in the methods of administration of these remedies and in the writing of prescriptions. Duke.

THIRD YEAR.

4.—**SYSTEMATIC MEDICINE.** Two hours credit. First semester, Tu. F., 10 to 11; second semester, 9 to 10. A systematic course of lectures is given on the diseases of the cardiovascular and respiratory systems, the peritoneum, liver, kidney, adrenals, thyroid, pancreas, and disorders of metabolism. Milne.

5.—**CLINICAL MEDICINE.** Two hours credit. Both semesters, M. Th., 10 to 11. Ward classes are held twice a week, in which cases are demonstrated, as far as possible, to illustrate the subjects of the lecture course at that time. Murphy.

Ward Work. Students are assigned to cases for individual study, and are required to prepare records of these cases and to note the progress and treatment of the disease.

6.—CLINICAL BACTERIOLOGY, SEROLOGY, AND HEMATOLOGY. Two hours credit. Second semester, F., 9 to 12. In this course instruction is given in agglutinative and other serum tests, including the Widal and Wassermann reactions, the bacteriology of pathological exudates, blood cultures, vaccine therapy and diseases of the blood. Trimble.

8.—DISEASES OF THE STOMACH AND INTESTINES. One hour credit. Second semester, S., 10 to 11. A systematic lecture course on diseases of the stomach and intestines. Wolf.

9.—OUT-PATIENT WORK. Assignments are also made to the different dispensary rooms. Each case is allotted to a student, whose duty is to prepare the history and to examine the patient, under the direction of the physician in charge, who advises the treatment to be carried out in each case.

FOURTH YEAR.

10.—CLINICAL MEDICINE. Four hours credit. Both semesters, Tu. F., 10 to 12. Clinics are given at the bedside on selected cases. Each of these cases has previously been studied by one student, who is responsible for the history of this case and for a special knowledge of this type of disease. Milne.

11.—CLINICAL MEDICINE. Three hours credit. Both semesters, M. Tu. Th., in sections, 9 to 12. A similar course to 10. St. Margaret's Hospital. Bohan and Milne.

12.—DIETETICS. One hour credit. First semester, S., 10 to 11. A lecture course on the dietetic treatment of disease. Wolf.

13.—CONTAGIOUS DISEASES. Two hours credit. Second semester, Tu., 1 to 2. A lecture course on the various infectious diseases. Hunt.

DERMATOLOGY.

THIRD YEAR.

1.—INTRODUCTORY COURSE. One hour credit. Second semester, Tu., at 8:30. Lectures and recitations. The anatomy and physiology of the skin, together with symptomatology, pathology, and clinical manifestations of the commoner skin diseases. Required of third-year students. McBride.

FOURTH YEAR.

2.—CLINICAL DERMATOLOGY. One hour credit. Both semesters, Th. and Sat. a. m. Lectures and demonstrations of the various skin diseases, at the Bell Memorial and St. Margaret's hospitals. Fourth year. McBride and Sutton.

3.—DISPENSARY CLINICS. M. W. Sat., 2 to 4. Dennie.

PSYCHIATRY AND NEUROLOGY.

THIRD AND FOURTH YEARS.

1.—FUNCTIONAL AND ORGANIC DISEASES OF THE NERVOUS SYSTEM. Two hours credit. Second semester, M. and Tu., at 10. Lectures. Required of third-year students. Kuhn.

2.—PSYCHIATRY. Two hours credit. W. and Sat., 11 to 12. Lectures covering the following subjects are given: History of insanity, forms of insanity, care and treatment of insanity in hospitals, care and treatment of insanity in general practice, state care of insane, and the relation of heredity to insanity. Both terms. Fourth year. Glasscock and Uhls.

3.—CLINICAL NEUROLOGY AND NEUROPATHOLOGY. One hour credit. Both terms, Tu. 2 to 4. This course includes practical exercises and demonstrations on the pathology of nervous diseases. Clinical demonstrations of neurological cases are also conducted, and students are assigned to the practical study of the nervous cases in hospital to be reported on at the class meeting. Skoog.

PEDIATRICS.

THIRD YEAR.

1.—PEDIATRICS. One hour credit. Second semester, M. W. Sat., at 1. Students are shown children from birth to fifteen years of age, with special reference to the physical examination and diagnosis and diseases of children. In sections limited to four students, in the wards of Mercy Hospital. Hunt.

FOURTH YEAR.

2.—PEDIATRICS. One hour credit. First semester, M. W. Sat. Continuation of course 1. Cases are assigned to students for examination and study, to be reported on at the next class meeting. Differential diagnosis and treatment are particularly emphasized, and the methods of infant feeding are demonstrated. Mercy Hospital; sections limited to four students. Hunt.

TOTAL HOURS OF INSTRUCTION (exclusive of hospital and dispensary work), 895. Systematic medicine 102, Medical clinics 306, Neurology 50, Neurology clinics 85, Psychiatry 36, Clinical pathology (laboratory diagnosis, Clinical Bacteriology, Serology, Hematology) 64, Therapeutics 32, Pediatrics 68, Contagious diseases 32, Physical diagnosis 68, Dermatology 52.

PREVENTIVE MEDICINE.

Professor CRUMBINE.
Associate Professor DEACON.
Associate Professor HASKINS.

For a number of years the relations existing between the University of Kansas and the Kansas State Board of Health have been very close and intimate. The water, food and drug laboratories of the Board are at the University, the work of analysis being done by the University men. The engineers of the State Board of Health are the engineers of the University. Much of the research and investigation undertaken by the State Board of Health has been through the coöperation of the Faculty of the University.

It is becoming more and more apparent that preventive medicine is to have an increasingly important place in the education and culture of the future physician.

The close relations between the State Board of Health and the University of Kansas have made it easy to bring about the more or less unique relationship that exists between the School of Medicine of the University and the State Board of Health, which, in effect, is the union of the curative and preventive agencies of the state.

Realizing the importance of a fundamental understanding of the value of preventive medicine, not only as practitioners of medicine, but looking to the making of trained health officers, the School of Medicine has created a separate Department of Preventive Medicine, at the head of which will be the Dean of the School, who is the secretary of the State Board of Health.

1.—PUBLIC HEALTH. One hour credit. Second year, second semester, Wednesday at 11.

(a) Sanitary engineering, water supplies, sewage collection, purification and disposal, sanitary architecture, plumbing, ventilation, public buildings, schools, hospitals, dwellings, etc.

(b) Special sanitation of public institutions, of transportation, school hygiene, rural, occupational, and other special sanitation.

2.—PUBLIC HEALTH. One hour credit. Four year, first semester, Wednesday at 11.

(a) Introductory, historical, definitions and principles, relations of hygiene to other sciences and professions.

(b) Vital statistics, economics of disease, eugenics, other social aspects and problems.

(c) Immunity, race questions, infection.

3.—PREVENTIVE MEDICINE. One hour credit. Fourth year, second semester, Wednesday at 11.

(a) The study of environment, air, water (including ice and mineral waters), milk, dairy hygiene and milk products, other foods, soil, sewage.

(b) Infectious diseases and their epidemiology (including venereal diseases), notifiable diseases.

(c) Vaccines and protective inoculations.

(d) Disinfection and disinfectants.

(e) Animal parasites.

(f) Insects and disease, the control of diseases through the control of their disseminators.

(g) Diseases communicated to man by the lower animals.

(h) Legal and administrative devices for the control of disease, the principles of sanitary law illustrated by the sanitary laws of Kansas, quarantine and isolation, health officers and boards (federal, state and local), municipal sanitation, pure foods and drugs, hygienic laboratories, the education of the public.

SURGERY.

Professor SUDLER.

Professor BLOCK.

Professor GRAY.

Professor SAWTELL.

Professor CURRAN.

Associate Professor HERTZLER.

Associate Professor SUTTON.

Associate Professor SCOTT.

Associate Professor CUNNINGHAM.

Assistant Professor HAYDEN.

Assistant Professor HALL.

Mr. ORR, Instructor.

Mr. NESSELRODE, Instructor.

Mr. FRANCISCO, Instructor.

Mr. ROBERTS, Assistant.

Mr. McCARTY, Assistant.

Mr. RUMSEY, Assistant.

Mr. GILLILAND, Assistant.

Instruction in the principles of the various branches of surgery is given by means of lectures, recitations, and assigned subjects. Clinical instruction is given in the dispensary, in the Bell Memorial Hospital, and in St. Margaret's Hospital.

SECOND YEAR.

1.—ANESTHETICS. One hour for nine weeks during the spring term. Lectures and assigned reading. Required of second-year students. Monday, at 11. Sudler and Cunningham.

2.—MINOR SURGERY. Two hours credit. Second semester. Instruction in bandaging and dressings, at the dispensary. Required of second-year students. Orr.

THIRD YEAR.

3.—GENERAL SURGERY. Two hours credit. First semester, M. and Th., at 11. Lectures, recitations, conferences, and assigned work. An introduction to the principles underlying surgical procedure. Required of third-year students. Sudler.

4.—GENERAL SURGERY. Two hours credit. Second semester, Tu. and Th., at 1. A continuation of course 1. Required of third-year students. Hayden.

5.—FRACTURES AND DISLOCATIONS. Two hours credit. First semester, Tu. and Th., at 9. Lectures and recitations. Required of third-year students. Sutton.

6.—CLINICAL SURGERY. Two hours credit. Second semester, M. and Sat., at 1. Instruction in the dispensary. Required of third-year students. Orr.

7.—GENITO-URINARY SURGERY. One hour credit. Both semesters, F., at 9. Lectures and recitations. Required of third-year students. Block.

8.—SURGICAL PATHOLOGY. Two hours credit. Second semester, Tu. and F., at 2. Required of third-year students. Hertzler.

THIRD AND FOURTH YEARS.

9.—CLINICAL SURGERY. At the Bell Memorial Hospital. Two hours credit. Both semesters, W., 9 to 12. Required of third-year students. Sudler.

FOURTH YEAR.

11.—OPERATIVE SURGERY. Two hours credit. Second semester, W., at 10. Animal experimentation and work on the cadaver. Required of fourth-year students. Sutton.

12.—SURGICAL CONFERENCES. One hour credit. Second Semester. Papers on assigned subjects. Required of fourth-year students. Sudler.

13.—ELECTROTHERAPEUTICS. One hour credit. Both semesters, F., at 3, and Sat., at 1. Lectures and demonstrations. Required of fourth-year students. Scott.

14.—CLINICAL SURGERY. Three hours credit. Both semesters, M., Tu., Th., 8 to 12. Assigned in sections. At St. Margaret's Hospital. Required of fourth-year students. Gray, Nesselrode.

15.—ORTHOPEDIC SURGERY. One hour credit. Second semester, Sat., at 9. Lectures and recitations. Required of fourth-year students. Sutton.

16.—CLINICAL SURGERY. One hour credit. Second semester. Instruction in wards at the Bell Memorial Hospital. Sudler.

17.—ORTHOPEDIC SURGERY. One hour credit. First semester, M., W., Sat., at 1. Instruction in wards at Mercy Hospital, in sections of four. Francisco.

OTORHINOLARYNGOLOGY.

THIRD YEAR.

1.—RHINOLARYNGOLOGY. One hour credit. Second semester, Th., at 2. For this course students are taught in groups at the Bell Hospital. It consists of a review of the anatomy and physiology of the parts, a drill in the use of instruments for diagnosis and in the methods of examination, illustrated by demonstrations on patients; also, of lectures, quizzes, and the examination of microscopical specimens. Required of third-year students. Sawtell, Hall, Roberts, and McCarty.

2.—OTOLOGY. One hour credit. Second semester, M., at 11. The plan of instruction pursued in the study of diseases of the ear is the same as that in the department of nose and throat. Required of third-year students. Sawtell, Hall, Roberts, and McCarty.

FOURTH YEAR.

3.—RHINOLARYNGOLOGY. One hour credit. First semester, Th., at 2. This course is a continuation of course 1. Here also the students are taught in groups. The subject matter of this course consists of a study of the deformities and diseases of the nose and throat and their treatment. Required of fourth-year students. Sawtell, Hall, Roberts, and McCarty.

4.—CLINICAL WORK. M. Tu. W. Th. Sat. Clinical instruction in diseases of the ear, nose, and throat is given in the dispensary and by

hospital clinics by means of direct examination of patients under the supervision of instructors, who personally teach each student proper methods of examination and the correct interpretation of his observations. Sawtell, Hall, Roberts, and McCarty.

OPHTHALMOLOGY.

1.—**PHYSIOLOGICAL OPTICS.** One hour credit. Instruction is given second-year students in physiological optics; vision tests, color tests, the taking of the field of vision, etc. Optical boxes, artificial eyes, ophthalmoscopes and suitable apparatus are provided for all physiological work and study. The course consists of laboratory work and demonstrations under the professor of physiology in the regular course in physiology.

2.—**LECTURES, DEMONSTRATIONS, AND CLINICAL WORK IN DISPENSARY.** Two hours credit. Both semesters. The course covers the method of examining the patient, functional testing, diseases, and injuries, medical and surgical ophthalmology, and the relation of the eye to general diseases. Required of third-year students. Curran.

3.—**PRACTICAL WORK.** One hour credit. Both semesters. Clinics are given in the Bell Memorial Hospital. The students are divided into small sections and each individual has the opportunity of closely inspecting the patients suffering from external diseases of the eye, of making the commoner applications used in the treatment, of assisting in the operating room, of studying refractive errors, functional testing, etc. Required of fourth-year students. Curran.

TOTAL HOURS OF INSTRUCTION, 838. Anesthetics 9, Minor surgery 36, General surgery 36, Regional surgery 54, Fractures and dislocations 36, Orthopedic surgery 18, Genito-urinary surgery 36, Surgical pathology 54, Operative surgery 144, Surgical diagnosis 36, Surgical conferences 18, Rectal surgery 9, Clinical surgery 144, Amphitheater clinics 144, Ear, nose, and throat 16, Eye 16, Ear, nose, throat, and eye clinics 32.

OBSTETRICS AND GYNECOLOGY.

Professor GUFFEY.
Professor NASON.
Assistant Professor IRLAND.
Mr. VANORDEN, Instructor.

Instruction in the principles of obstetrics and gynecology is given by means of lectures, recitations, and demonstrations. Clinical instruction is given in the dispensary and wards of the Bell Memorial and Bethany hospitals. Further practical instruction in obstetrics is obtained through the out-patient department.

SECOND YEAR.

1.—**PHYSIOLOGICAL OBSTETRICS.** Two hours credit. Second semester, M. W., at 1. Lectures and recitations. Required of second-year students. Ireland.

THIRD YEAR.

2.—**PATHOLOGICAL OBSTETRICS.** Two hours credit. Fall term, M. S., at 9. Lectures, recitations, and demonstrations. Required of third-year students. Guffey.

3.—**DISEASES OF THE FEMALE GENITAL TRACT.** Two hours credit. Second semester, M. Tu., at 9. Lectures, recitations, and demonstrations of illustrative pathological material. Required of third-year students. Guffey.

4.—**OPERATIVE OBSTETRICS.** One hour credit. Second semester, F., at 1. Recitations, demonstrations, and practice on the manikin by the student. Required of third-year students. Ireland.

THIRD AND FOURTH YEARS.

5.—DISPENSARY.—One hour credit. A minimum of eighteen hours is required. A course devoted chiefly to history taking, the technique of examination, and the treatment of ambulatory patients. Students assigned in groups. Guffey, Irland and Vanorden.

6.—PRACTICAL WORK IN OBSTETRICS. The conduct of two births in a hospital and eight on the out-patient service is required before graduation. Assigned work. Nason, Guffey, Irland and Vanorden.

FOURTH YEAR.

7.—CLINICAL CONFERENCE IN OBSTETRICS AND GYNECOLOGY. Two hours credit. Both semesters, Th. 3 to 5. An exhaustive consideration of all cases in the Bell Hospital. Also, reports and discussions of case histories and important abnormalities met with in the out-patient service. Required of fourth-year students. Guffey.

8.—CLINICS IN OBSTETRICS AND GYNECOLOGY. Two hours credit. Both semesters, F., 9 to 11. This course logically follows course 5, as the same patients are further examined, given treatment, or operated upon. Students present histories, assist with operations, and make full reports of pathological findings, operative technique, or treatment. Required of fourth-year students. Guffey.

9.—OBSTETRICAL AND GYNECOLOGICAL PATHOLOGY. Two hours credit. Second semester, W., 8 to 10. A course devoted to the study of gross and microscopic pathology with special reference to specimens removed from patients operated upon before the class. Required of fourth-year students. Major and Guffey.

TOTAL HOURS OF INSTRUCTION, 272. Gynecology: didactic 32, clinical 77, laboratory 16, total 115. Obstetrics: didactic 86, clinical 77, laboratory 16, total 179. Total didactic 118, clinical 154, laboratory 32.

TRAINING SCHOOL FOR NURSES.

FACULTY.

FRANK STRONG, Ph. D., President.
S. J. CRUMBINE, M. D., Dean, School of Medicine.
M. T. SUDLER, M. D., Associate Dean, School of Medicine.
S. MILO HINCH, R. N., Superintendent of Bell Memorial Hospital, Supervisor of Nurses.
WILLIAM KIRK TRIMBLE, M. D., Lecturer on Pathology.
WALTER S. SUTTON, A. M., M. D., Lecturer on Surgery.
MARY EDNA DARLAND, A. B., M. D., Instructor in Anatomy.
DON CARLOS GUFFEY, A. M., M. D., Instructor in Medicine and Obstetrics.

This School was established in July, 1906, with the opening of the Bell Memorial Hospital. It is a division of the School of Medicine of the University of Kansas, and subject to the same governing bodies.

EQUIPMENT.

The present hospital building contains sixty-five beds. The hospital receives all classes of patients except those suffering from dangerous contagious diseases or mental troubles, and shows a great variety of work. Also, since it is a teaching hospital, the character of the work shown is more instructive than that shown ordinarily in private hospitals.

The close proximity of the laboratory, library, and other equipment of the School of Medicine affords great advantage in the way of medical information and instruction.

ADMISSION.

Women of good character between the ages of twenty and thirty are eligible for admission. Those with a high-school education are given preference. Those who are accepted are accepted with the understanding that they must spend a probationary period of three months in the school, during which time they will receive board, laundry, and lodging, but no other compensation, and that they agree to remain in the school, unless dismissed, the full term of two and a half years.

The didactic instruction begins October 1 and ends June 1 of each year, but students are admitted at any time when there is a vacancy.

Any young woman who wishes to enter the school must make formal application to the supervisor of nurses of the Bell Memorial Hospital, Rosedale. With this application should be sent letters showing what educational advantages she has enjoyed, testifying to her good moral character, and to her good health. These letters should preferably be from her instructor and her medical attendant.

ADVANCED STANDING. Candidates for advanced standing must satisfy the requirements for admission and also show that they have had the work already done by the class to which they wish admission. An official statement of character and ability from the training school giving the previous work will be required. There will be required of them, as of beginners, a probationary period, and they will be required to pass an examination on the work for which they seek credit.

COURSE OF STUDY.

The course is for two and a half years. It is customary to grant the members of the first- and second-year classes a vacation of three weeks each year, and two weeks during the last six months.

The instruction consists of two parts—the practical and the theoretical. The practical work consists of sixty hours' work each week. The theoretical instruction requires four hours of lectures or recitations each week, together with the necessary laboratory work in dietetics, etc. This theoretical instruction includes the necessary work in anatomy, physiology, hygiene, medicine, pediatrics, obstetrics, etc.

HOURS OF INSTRUCTION.

| | Juniors. | Intermediate. | Seniors. |
|--|-----------|---------------|----------|
| Hygiene and nursing ethics | 4 | .. | 4 |
| Theory and demonstration—nursing | 32 | 32 | .. |
| Anatomy and physiology | 32 | .. | .. |
| Materia medica | 20 | .. | .. |
| Ward solutions | 2 | .. | .. |
| Urinalysis | .. | 6 | .. |
| Bacteriology | 16 | .. | .. |
| Laboratory | 6 | .. | .. |
| Obstetrical and Gynecological | .. | 32 | .. |
| Chemistry | 10 | .. | .. |
| Pediatrics | .. | 15 | .. |
| Surgery | .. | 8 | .. |
| Bandaging | .. | 4 | .. |
| Dietetics | 40 | .. | .. |
| Nervous diseases | .. | .. | 6 |
| Ear, nose, and throat | .. | .. | 5 |
| Eye | .. | .. | 5 |
| Massage | .. | .. | 15 |
| | <hr/> 162 | <hr/> 97 | <hr/> 35 |

PROMOTION.

Students are advanced upon the obtaining of satisfactory grades in their practical work and upon their passing satisfactory examinations in their theoretical work. Reports on the practical work are made monthly and those on the theoretical work semiannually.

GRADUATION.

At the close of a successful course of two and a half years the students are granted a diploma under the seal of the University of Kansas. Before, however, they receive such a diploma, they must make up lost time and demerits charged against them during the course.

EXPENSES.

Each nurse must furnish her own uniform, books and instruments.* To cover such professional expenses each member of the training school is allowed \$7 a month. From this compensation is deducted, of course, the cost of material unnecessarily broken or lost. Since the board, lodging and necessary laundry work are furnished free, the pupil nurse secures her training at little or no expenditure of money.

* These instruments consist of 1 hypodermic syringe (all glass), 1 bandage scissors, 1 small scissors, 1 probe, 1 thumb forceps.



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION IX
SCHOOL OF EDUCATION**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Topeka.

FACULTY.

FRANK STRONG, Ph. D., President.
FREDERICK J. KELLY, Ph. D., Dean and Professor of Education.
ARVIN OLIN, A. M., Professor of Education.
EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.
EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.
ERASMUS HAWORTH, Ph. D., Professor of Geology.
ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.
WILLIAM A. GRIFFITH, Professor of Drawing.
WILLIAM H. JOHNSON, A. M., Professor of Education.
JAMES NAISMITH, M. D., Professor of Physical Education.
ELMER F. ENGEL, A. M., Professor of German.
ELIZABETH C. SPRAGUE, Professor of Home Economics.
WILLIAM B. DOWNING, Professor of Public School Music.
HANNAH OLIVER, A. M., Associate Professor of Latin.
RAYMOND A. SCHWEGLER, A. M., Associate Professor of Education.
ELISE NEUENSCHWANDER, Ph. D., Associate Professor of Romance Languages.
ULYSSES G. MITCHELL, Ph. D., Associate Professor of Mathematics.
EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
RALPH E. CARTER, A. M., Assistant Professor of Education.
CHESTER A. BUCKNER,* A. M., Assistant Professor of Education.
HUBERT W. NUTT, Ph. B., Assistant Professor of Education.
WILLIAM L. EIKENBERRY, S. B., Assistant Professor of Secondary Biological Science Teaching.
FRANK G. MELVIN, Ph. D., Assistant Professor of European History.

ADMINISTRATIVE COMMITTEE.

F. J. KELLY, *Chairman.*

| | |
|-----------------------|-----------------------|
| ARVIN OLIN. | EDWIN M. HOPKINS. |
| ARTHUR T. WALKER. | RAYMOND A. SCHWEGLER. |
| WILLIAM H. JOHNSON. | ULYSSES G. MITCHELL. |
| ELIZABETH C. SPRAGUE. | |

* Absent on leave.

The School of Education.

PURPOSE.

The fundamental purpose of the School of Education is to organize education in the University of Kansas on a strictly university and scientific basis, for equipping its students who have chosen public education as a career with a sound philosophy of education and a knowledge of the principles of educational psychology, of the historical evolution of educational thought and practice, and of school organization, administration, and method, so that they may contribute constructively toward the solution of the problems of the profession of education throughout the public-school system and thus become factors in developing a professional attitude toward teaching.

The courses are planned to meet the professional needs of the following classes: College and normal-school instructors in education, superintendents and principals of schools, heads of departments in normal and high schools, supervisors of special subjects, and teachers in high schools. Certain of the courses, in which education is presented primarily as an important function of society as well as of individuals, should also be of interest to all University students, whether they intend to become teachers or not, and are hence open to all College students of Junior standing, or above.

DEGREE IN EDUCATION.

The degree of bachelor of science in education may be granted to students who take seventy-two hours beyond the completion of Sophomore work. This work must include twenty-four hours in education and must meet all requirements for the University teachers' diploma.

UNIVERSITY TEACHERS' DIPLOMA AND STATE TEACHERS' CERTIFICATE.

The University teachers' diploma is accepted by the State Board of Education and legally qualifies the candidate for the state teachers' certificate. Regular teachers in all four-year high schools in Kansas must have the state certificate, which is granted without examination only to persons completing a four-year college course.

On recommendation of the Faculty of the School of Education, the University teachers' diploma may be granted to graduates of the School of Education, to graduates of the College, and to those receiving degrees from the Graduate School, on the following conditions:

1. Candidates for the University teachers' diploma are required to offer as part of their work, philosophy I (elements of psychology), or its equivalent, three hours in history or education, three hours in educational psychology, three hours in educational administration, three additional hours in one or more of the three preceding groups, a teachers' course in some academic subject, and a course in senior teaching. On petition to the Faculty of the School of Education teachers who have taught successfully in high school may substitute other education courses for senior teaching.

2. Candidates for the University teachers' diploma and the bachelor of arts degree must offer 125 hours of undergraduate work.

3. The record of scholarship in all the work offered for the teachers' diploma (125 hours) must average not lower than grade II.

Note that the three hours in educational psychology, and three hours in history of education, *must* be taken before one may enter the other required work in education.

SPECIAL DIPLOMA.

Mature persons who find themselves unable to meet the academic requirements for the bachelor's degree in education and the regular diploma and certificate, but who show the ability to carry on the work of certain major subjects in the School of Education, may be admitted as candidates for a special diploma in teaching or in the supervision of instruction in elementary and secondary schools. Such special courses will be arranged for them as experience may show desirable. This special diploma has no legal significance.

ADMISSION.

The work in the School of Education is based upon a four-year high-school course, or its equivalent, and the satisfactory completion of the first two years in the College of Liberal Arts and Sciences or their equivalent, *including a course in elementary psychology.*

Applicants for admission to the School of Education who are deficient in a small portion of these requirements may be admitted conditionally, at the discretion of the Dean.

Claims for advanced standing must be made by the student at matriculation. Of his fitness for advanced work he must satisfy the professors of the subjects he elects.

When the student enters the School of Education he must select the academic subject or subjects in which he desires to specialize, or announce his intention to specialize in administrative and supervisory work in education itself. For general suggestions as to his choice of work he should consult the Dean of the School of Education.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the University intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 11, 12 or 13, 1916.

Registration at a later date will be permitted only on the payment of a fee of one dollar.

DOUBLE REGISTRATION. Students regularly registered in any of the other schools of the University may be admitted as either regular or unclassified students in the School of Education, but an application for such double registration must have approval of the deans of the two schools concerned. A student so registered will be subject to all the regulations concerning quantity and character of courses elected prevailing in both schools. Such students are exempt from additional fees.

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid, students should apply to the Dean of the school to which they desire admission for enrollment in their classes. Enrollment the first semester occurs September 12 and 13, 1916, and on the first day of the second semester.

Enrollment at a later date will be permitted only on the payment of a fee of one dollar.

BUREAU OF EDUCATIONAL SERVICE.

One of the chief functions of a School of Education in a State University is to render such service as it can in helping the school superintendents and teachers of the state to solve the practical problems which arise in their work. In order to systematize the efforts of the School of Education along this line the Bureau of Educational Service is organized. The bureau invites the school people to address it concerning their educational problems of whatever nature. The bureau also offers to lend its aid in carrying on such investigations as the people in charge

of the public schools wish to conduct. Furthermore it provides a medium through which the results of educational investigations made anywhere in the state are made most widely available to the rest of the state.

SCHOOLMEN'S CONFERENCE AT THE UNIVERSITY.

The School of Education has in charge the Annual High-school Conference, which meets in March of each year.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a representative committee of the Faculty of the School of Education preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position as teacher. In so doing great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

Records are kept of every detail of the student's qualifications for teaching, including the estimate of all college professors of the scholarship, personality, strength of character, and general adaptability of the candidate, as well as critical estimates of his teaching ability, indicated by his practice teaching in Oread Training School.

The committee urges members of school boards and school administrators to come to Lawrence in person when possible, so that personal conferences with both University instructors and the candidates for teaching may insure mutual satisfaction and be a guarantee of effective service.

The committee has adopted the policy, in its official recommendations, of attaching special importance to graduate study in the professional preparation of teachers.

EQUIPMENT.

The School has a growing educational museum of considerable value, including ancient and modern textbooks, former and present-day school appliances and equipments, maps and charts, a good deal of which is frequently in use in the Training School. There are over five thousand volumes in the University library classified under the title "Education." This equipment is being greatly augmented through the acquisition of the files of leading French and German educational periodicals and classical treatises. The School of Education makes constant use of the stereopticon and numerous lantern slides, and has a rapidly growing collection of stereographs with stereoscopes for illustrating their proper use in the schools. A special room for this work, fitted up as a dark room, is reserved for such use by members of the Faculty of Education. Forty-five weekly or monthly educational periodicals come to the library. There are complete files of the leading American periodicals and the files of the leading English, French, and German periodicals are being completed. In addition to the usual library facilities, a commodious seminary room and an alcove in the reading room of the library are reserved for the use of the several departments within the School of Education. The seminary room is equipped with separate card index system and is under the direction of a trained library attendant.

OREAD TRAINING SCHOOL.

As a laboratory for the science of education there is maintained as a part of the School of Education a typical high school under the name Oread Training School. It is supported partly by students' fees and partly by the state. It is housed in a separate building which was

erected during the summer of 1915. The school is designed to exemplify for prospective teachers and for visiting teachers, principals, and superintendents, the equipment, organization, curriculum, and methods of instruction advocated by the School of Education.

University students with deficiencies may make these up in the school. Any student who has completed the eighth grade in the public schools, or its equivalent, is eligible to admission. Those who have credits for high-school work done elsewhere will be admitted to those advanced courses for which their previous work qualifies them.

ARRANGEMENT OF COURSES.

All courses of a professional pedagogical character are offered in the School of Education. Academic courses, to which students of the School of Education are admitted on the same conditions as regular students of the College, are offered in the College of Liberal Arts and Sciences. Certain courses in other schools of the University will also be open to students of the School of Education. To secure admission to these courses not offered in the School of Education the candidate must register in the school in which the course he desires is given and be subject to all the regulations prevailing in that school.

Students of the College of Liberal Arts and Sciences who desire to secure the state teachers' certificate and the degree from the School of Education and who have already chosen teaching as a profession would do well to plan for it from the beginning of their college course.

Certain courses which are not strictly professional and hence are not listed among those offered by the School of Education are nevertheless very helpful in preparing for the most efficient service as teacher or school administrator. Among these may be mentioned psychology, sociology, and biology.

In addition each teacher should have thorough extended preparation in one subject and reasonable preparation in two or three subjects. Experience has shown that the following combinations are most frequently demanded: Latin, German; English, German; English, history, civics; English, Latin, history; mathematics, physics; botany, zoölogy; mathematics, physics, chemistry; physics, chemistry, botany, zoölogy, physiology, physiography. Public speaking is desirable as a part of the preparation for teaching English, and courses in physical education add desirable qualifications for all teaching positions in the public schools.

GRADUATE POLICY OF SCHOOL OF EDUCATION.

The progressive tendency in many states is to encourage teachers and school administrators to continue in some university advanced research in education. The most vital discoveries in this field must finally be made by those on the ground—teachers in active service. This work creates a demand for those who have had training in the methods of investigation and in the interpretation of the data collected.

The School of Education provides instruction suited to the needs of graduate students in educational psychology, history and philosophy of education, educational administration, and in the principles of teaching the various academic and technical subjects. In accordance with the regulations of the Graduate School, students may pursue, as a major or minor, advanced work in any of these subjects. The master's degree usually requires one year of graduate work; the doctor's degree three years. Work leading to these higher degrees, with education as a major, is planned in such a way as to afford preparation for responsible positions, particularly those involving administrative and supervisory duties and teaching of education in colleges and normal schools. Graduate work, undertaken with the major in some academic subject and the minor in education, is usually planned in such a way as to afford desirable equipment for the teaching of special branches.

All work for the higher degrees with education as major should be planned carefully from the beginning, in consultation with the Dean of the School of Education. Graduate work may be done in the Summer Session.

DESCRIPTION OF COURSES.

Sophomore Courses.

To meet the demands of the School of Fine Arts, in which certain teachers' certificate requirements are fulfilled in two years of work above high school, and to enable sophomore students in the College, who find it necessary to leave college and start teaching, to meet the requirements of the State Board of Education for a three-year certificate, courses 1 and 2 are offered by the School of Education. The certificate thus secured is valid only in elementary schools, junior high schools, and two-year high schools. These courses will not be counted for credits toward the University teachers' diploma unless the student has taught at least one year on the certificate which the courses were used to secure.

1.—METHODS OF TEACHING. Three hours credit. Second semester, 10:30. This course will deal with those fundamental principles of method that will be most helpful to teachers in the organization and presentation of subject matter. The illustrative materials will be taken from a wide range of subjects, but the emphasis will be upon the problems that pertain particularly to the elementary schools. Nutt.

2.—ELEMENTARY EDUCATION. Three hours credit. Second semester, 8:30. The purpose of the course is to give the prospective teacher in elementary schools a general appreciation of the aim, scope, and setting of elementary education and the more necessary information on the internal organization of the elementary school.

Junior, Senior, and Graduate Courses.

The following courses are so arranged as to enable students to plan for their advanced work from their Junior year, with reference to three fairly distinct aspects of education: the historical, the scientific and theoretical, and the administrative. One course in history of education (50 or 51) and one course in educational psychology (64), or psychology of high-school subjects (75) are prerequisites for all other courses in the School of Education. Advanced credit from other universities or colleges, or from normal schools, will be granted as consideration of the individual cases may warrant. Such students should consult the Dean of the School before enrolling.

HISTORY OF EDUCATION.

50.—HISTORY OF ANCIENT AND MEDIÆVAL EDUCATION. Three hours credit. First semester, 8:30, 3:30. This course is a study of educational principles and practice, systems, and educational theorists among ancient and mediæval people. It includes the important features of Oriental, Greek, Roman, early Christian, and Saracenic education, the renaissance of learning under Charlemagne, the rise of universities, and the early phases of the Renaissance movement. Olin.

51.—HISTORY OF MODERN EDUCATION. Three hours credit. First semester, 2:30; second semester, 8:30, 3:30. Doctrines and systems developing from the educational reforms and reformers of the seventeenth century, including Bacon, Comenius, and other innovators. Decline and restatement of humanism in the eighteenth century, the strengthening of realism, and the institutional development growing out of these changes. The educational evolution of the nineteenth century in Germany, France, England, and America under such leaders as Pestalozzi, Guizot, Arnold, Spencer, and Mann. Olin.

59.—EDUCATIONAL CLASSICS. Two hours credit. First semester, 10:30. A critical and historical study of selected dialogues of Plato, and of the educational writings of Locke. An attempt will be made to trace the relation between the opinions of these two writers and the educational theory and practice of the age in which each lived. Olin.

60.—EDUCATIONAL CLASSICS. Two hours credit. Second semester, 10:30. An intensive study in their historical setting of the educational writings of Rousseau and Spencer. Olin.

63.—EDUCATION IN AMERICA. Three hours credit. Second semester, 9:30. A study of the origin and development of educational ideas, institutions, and systems in the colonial period; the evolution of the academy, high school, and professional school; the education of girls and women; manual and vocational instruction; and the work of leading educators and theorists, Mann, Willard, Lyon, Howe, Gallaudet, Barnard, Eliot, Harris. Olin.

102.—SEMINAR. Educational systems of Herbart and Froebel. Two hours credit. First semester, by appointment. Olin.

103.—SEMINAR. Origin and early development of Universities. Two hours credit. Second semester, by appointment. Olin.

EDUCATIONAL THEORY.

54.—EDUCATIONAL CLINIC. Three hours credit. Second semester, by appointment. By the kindly coöperation of neighboring schoolmen it has been possible to provide for mature students an opportunity for the direct study of typical cases of exceptional mental development. Tests for various mental functions will be demonstrated, and the Binet-Simon, Yerkes-Bridges, and other scales of tests will be used to determine psychic normality. Schwegler.

55.—MENTAL MEASUREMENT OF SCHOOL CHILDREN. Three hours credit. First semester, 9:30. A study of the theory and practice of mental measurement. Typical mental traits are selected for special study by means of a wide range of mental tests. Special emphasis will be placed upon the various recognized scales of mental measurement, with a view to the development of practical skill in their use in the schoolroom. Schwegler.

64.—EDUCATIONAL PSYCHOLOGY. Three hours credit. Both semesters. First semester, 1:30; second semester, 9:30. Not open to students who have taken course 75. The processes usually treated in general psychology will be considered in their relation to the technique and economy of learning. Habit formation and thought will receive especial attention in their connection with the study of school subjects. Lectures, experiments, reading, and discussion. Carter.

65.—GENETIC PSYCHOLOGY FOR TEACHERS. Two hours credit. First semester. The purpose of this course is to present the facts of mental development and to summarize the results of experimental investigations and reliable observations which suggest direct educational applications. (Not given in 1915-'16.)

67.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours credit. Second semester, 9:30. A more intensive treatment of parts of courses 64 and 75. In a sense it is a laboratory course supplementing them. Opportunity will be given the student to spend practically a third of his time in reading and working on some special interest. Carter.

68.—THE PRINCIPLES OF EDUCATION. Three hours credit. First semester, 11:30. An analysis of educational norms in theory and practice in the light of the facts of biology, psychology, and sociology. Lectures, library studies, written reports. Schwegler.

69.—TECHNIQUE OF TEACHING. Two hours credit. First semester, 3:30. A careful study of the fundamental principles of classroom in-

struction will be made. The Training School will offer abundant opportunities for demonstrative and illustrative material. The course is designed to supplement the work of teachers' courses and to correlate as much as possible with practice teaching. Nutt.

71.—THE ABNORMAL CHILD.—Three hours credit. First semester, 10:30. The growth and development of children are studied with special reference to the nature and causes of arrest as found in backward, defective, and degenerate children. The course is intended for mature students who are preparing themselves for executive positions in town and city schools. Lectures, and visits to various institutions maintained by the state for defective and delinquent children. Schwegler.

75.—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit. Both semesters. First semester, 9:30; second semester, 1:30. (May be taken instead of course 64 as the state and school requirement in educational psychology, but not open to students who have had course 64.) This course differs from course 64 chiefly in the organization of material. Instead of making the different mental processes the basis of organization for the discussion of learning in the schools, the high-school subjects are treated separately with reference to the mental processes and psychological principles involved. Carter.

78.—ADOLESCENCE. Three hours credit. Second semester, 11:30. A detailed study of the physical, social, and psychological aspects of adolescence. The course will lay special stress on the problems of physical and mental hygiene, as they appear in the physical, intellectual, social, and religious development of the adolescent. Schwegler.

79.—MORAL EDUCATION. Two hours credit. Second semester, 11:30. A critical study of the underlying psychological forces, both conscious and unconscious, which govern the development of habits of thought and action, followed by a review of prevailing systems of moral education. Schwegler.

100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Two hours credit. Both semesters, hours by appointment. Students may spend their time in an intensive study of recent investigations in an educational problem involving psychological principles and methods, or in an actual investigation of such a problem. Carter.

101.—SEMINAR IN MENTAL DEFECTS. Two hours credit. Both semesters, by appointment. An opportunity for mature students to make a special study of certain forms of irregular mental life frequently met in grade and high-school work. Schwegler.

EDUCATIONAL ADMINISTRATION.

53.—SOCIAL EDUCATION. Two hours credit. First semester, 11:30. A study of the response of the school to changing social demands, and the initiative which it should take in creating better social conditions. The purpose of the course is to acquire a workable theory of education for social progress and to survey practical applications of this theory. Carter.

56.—VOCATIONAL EDUCATION AND GUIDANCE. Three hours credit. First semester, 10:30. The development of vocational education in Europe and America; its organization and administration; the relation of the school system to the various industries of the community; the relation of industrial education to vocational guidance; the consideration of the various theories for the adjustment of educational means to vocational aptitudes. Johnson.

57.—SCHOOL HYGIENE. Two hours credit. Second semester, 3:30. The work of this course will be considered under three principal divisions: (1) Schoolroom sanitation; (2) Personal hygiene of school children; (3) Mental hygiene of school children. Nutt.

58.—NATIONAL EDUCATIONAL SYSTEMS. Three hours credit. Second semester, 10:30. A study of the organization and administration of the school systems of Germany, France, and England, including elementary, secondary, and higher schools. The educational institutions of these countries and the methods of controlling and administering them will be compared with each other and with the corresponding institutions in the United States. Kelly.

61.—HIGH-SCHOOL ADMINISTRATION. Three hours credit. Both semesters, 8:30. The purpose of this course is to present the practical problems in the administration of the high school. The relationship between school and community and plans for greater coöperation between the school and the home will be discussed. Each member of the class will be expected to make a rather detailed study of some high-school problem in which he is especially interested. Johnson.

66.—EDUCATIONAL STATISTICS. Three hours credit. First semester, 11:30. A brief introduction to statistical method as applied to educational problems, followed by a critical examination of some of the representative statistical investigations of recent years. Emphasis will be placed upon the graphic representation of school facts in all cases which lend themselves to such treatment. Kelly.

72.—SUPERVISION OF INSTRUCTION. Two hours credit. First semester, 9:30. The work of the superintendent in supervising instruction. The principles underlying the selection and organization of subject matter for the courses of study, and the criteria for determining the validity of devices and methods of instruction, with special attention to the scales and tests for measuring the results of instruction.

73.—CITY-SCHOOL ADMINISTRATION. Two hours credit. Second semester, 8:30. The work of the city superintendent other than the supervision of instruction. The building, equipping, and keeping in order of the school plant, budget-making, financial-account keeping, blanks, annual reports, salary schedules, and means of popularizing the schools in the city.

74.—EDUCATIONAL ORGANIZATION AND ADMINISTRATION. Three hours credit. First semester, 8:30. Among the topics discussed are: relation of the national government to education in the states and insular possessions; state administrative organizations; local units of control; school costs and support; material equipment; recent legislation; administrative and supervisory officers; classification and promotion of pupils; period of attendance; physical education and health.

77.—PRACTICAL PROBLEMS OF PUBLIC-SCHOOL EDUCATION. Credit to be arranged. Saturday morning at 10, both semesters. The work offered in this course is planned with special reference to the needs of actual teachers and administrators living in the vicinity of Lawrence. Vital problems in school work will be studied and interpreted in the light of modern scientific principles and methods of investigation. The work and the instructors will be arranged when the class first meets, September 23.

The amount of credit given will depend upon the work of the individual student.

This course is designed for those teachers and school supervisors who, although in actual service, desire to continue their professional development.

104.—SEMINAR IN EDUCATIONAL ADMINISTRATION. Two hours credit. Both semesters, by appointment. Kelly.

SPECIAL METHODS AND SENIOR TEACHING.

The prerequisites for all teachers' courses are not less than twenty nor more than twenty-five hours in the subject in which the teachers' course is given or in closely allied subjects, three hours in history of education, and three hours in educational psychology. All teachers' courses, not including credits for practice, shall be not less than two nor more

than four hours in length for one semester, and shall be open to students of Senior and Graduate standing. By permission of the Dean a portion of the work described above as prerequisite may be taken at the same time with the teachers' course, and special mature students under certain conditions, with the approval of the Dean, may take other education courses in lieu of a teachers' course.

The items enumerated below are suggestive of the kinds of topics with which the following teachers' courses in special branches are concerned:

1. A simple statement of the broader aspects of the distinctive field of education, indicating the special adjustment of the moral, æsthetic, social, and practical disciplines to be reasonably expected from a study of the subject.

2. A brief sketch of the actual history of the subject in the school curriculum, showing the gradual change and improvements in the textbook presentations of the subject, and the gradual improvements in other apparatus than textbooks adopted for use in teaching it.

3. The gradual change in the conception of its educational value and the degree and nature of correlation with other subjects, particularly since the report of the Committee of Ten.

4. The growing refinement of methods for presenting the subject.

5. The grade preparation to be presupposed at present, its present status, as seen from a comparison of typical high-school curriculums, together with the social, psychological, and practical obstacles to its attaining its ideal educational aim.

6. The necessary, and also the more ideal, preparation called for in the teacher, academic and professional.

7. References to books and special monographs dealing with the topics of the course, and a suggested list of books desirable for reference for high-school libraries.

In addition to the instruction in the following specialized courses in the theory of teaching, a continuous period of not less than nine weeks of supervised teaching should be arranged for by students electing such courses. Exceptional facilities are offered for this teaching in the Oread Training School.

81.—TEACHERS' COURSE IN BIOLOGICAL SCIENCES. Three hours credit. Both semesters, 8:30. A study of the function of the biological sciences in the high school; the organization of the high-school science courses; and the methods, devices, books, and apparatus to accomplish this function. Eikenberry.

81a.—SENIOR TEACHING IN BIOLOGICAL SCIENCES. Both semesters, hours to be arranged. Eikenberry.

90.—TEACHERS' COURSE IN CHEMISTRY. Two hours credit. Second semester, by appointment. Pedagogics and technique of instruction in chemistry in the high school. Bailey and the instructor in charge of the elementary course.

90a.—SENIOR TEACHING IN CHEMISTRY. Both semesters, hours to be arranged. Bailey and the instructor in charge of the elementary course.

95.—TEACHERS' COURSE IN DRAWING AND DESIGN. Three hours credit. Prerequisite, courses 54, 51, and 1 in drawing. Griffith.

95a.—SENIOR TEACHING IN DRAWING AND DESIGN. Second semester, hours to be arranged. Griffith.

86.—TEACHERS' COURSE IN ENGLISH. Three hours credit. First semester, 1:30. The principles of teaching English composition, language, and literature; lectures, reference reading, conferences, visiting of classes and schools, reports, and final thesis. Hopkins.

The prerequisites in English for course 86 are courses 1, 2, 10, 11, 12, 13, 68, 78, and in Advanced English Composition, five hours of any courses from 50 to 57 at option.

86a.—SENIOR TEACHING IN ENGLISH. Both semesters, hours to be arranged. Hopkins.

85.—TEACHERS' COURSE IN GERMAN. Three hours credit. Second semester, 9:30. Advanced grammar, with theory of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Engel.

85a.—SENIOR TEACHING IN GERMAN. Both semesters, hours to be arranged. Engel.

91.—TEACHERS' COURSE IN HISTORY. Two hours credit. First semester, 2:30. A study in adapting historical and current social literature to the service of high-school students. High-school courses of study, methods of teaching, textbooks, reference books, and apparatus will be considered. Melvin.

91a.—SENIOR TEACHING IN HISTORY. Both semesters, hours to be arranged. Melvin.

83.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit. First semester, 9:30. The history of the home economics movement, showing the reason for the diverse standards and aims to be found in the work in different schools. Special emphasis will be put on the high-school problem; the ground that should be covered and methods of presentation; the planning of equipment, of courses, and of typical lessons. Sprague.

83a.—SENIOR TEACHING IN HOME ECONOMICS. Both semesters, hours to be arranged. Sprague.

87.—TEACHERS' COURSE IN LATIN. Two hours credit. First semester, 2:30. The work consists of discussion of the best literature on the aims and methods of teaching Latin, and a critical examination of some textbooks used in secondary Latin teaching. Walker.

Those who wish to secure a special recommendation as teacher of Latin must elect at least twenty-five hours in the department of Latin beyond course 4; courses 5 and 13 must be included.

87a.—SENIOR TEACHING IN LATIN. Both semesters, hours to be arranged. Oliver.

89.—TEACHERS' COURSE IN MATHEMATICS. Three hours credit. Second semester, 11:30. It deals with the history, teaching, and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of (1) history of the teaching of mathematics, readings, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) discussions on the best methods of presenting the topics. Open to Seniors and graduates who have completed courses 62 and 7 in mathematics. Mitchell.

89a.—SENIOR TEACHING IN MATHEMATICS. Both semesters, hours to be arranged. Mitchell.

94.—TEACHERS' COURSE IN MUSIC. Downing.

94a.—SENIOR TEACHING IN MUSIC. Downing.

For public-school music course, see bulletin of the School of Fine Arts.

82.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours credit. Second semester, 9:30. The course includes a history of physical geography and physiography in public schools and methods of teaching them, laboratory work and outdoor observations which can be conducted in high schools, meteorological apparatus and weather reports, and best methods of studying land forms and land sculpture with high-school students. Haworth.

82a.—SENIOR TEACHING IN PHYSICAL GEOGRAPHY. First semester, hours to be arranged. Haworth.

97.—TEACHERS' COURSE IN PHYSICAL EDUCATION. Two hours credit. First semester, 9:30. Laboratory hours by appointment. A study of the principles of play, the classification of games, showing the grade for which each is adapted; and an analysis of the different games, showing the principles involved, and the attributes developed. The methods used in coaching and officiating, the locating, equipping, and organizing of playgrounds. Naismith.

97a.—SENIOR TEACHING IN PHYSICAL EDUCATION. Two hours credit. First semester, 8:30. An analysis of gymnastic movements, showing their adaptation to the different grades; the method of combining these into drills, devising drills for special occasions and to suit varying conditions; organizing and conducting classes; and observation of methods by visitation and practice teaching with selected classes. Naismith.

80.—TEACHERS' COURSE IN PHYSICS. Three hours credit. Second semester, by appointment. Discussion of the proper subject matter of an elementary course in physics, and of the various methods of treating such matter in demonstration, recitation and laboratory. Members of the class will give from time to time demonstrations on assigned topics in elementary physics. Stimpson.

80a.—SENIOR TEACHING IN PHYSICS. Second semester, hours to be arranged. Stimpson.

88.—TEACHERS' COURSE IN ROMANCE LANGUAGES. Three hours credit. First semester, by appointment. Systematic review of grammatical principles from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of the methods of teaching languages. Open only to students who give evidence of fitness for the work. NeuenSchwander.

88a.—SENIOR TEACHING IN FRENCH. Both semesters, by appointment. NeuenSchwander.

88b.—SENIOR TEACHING IN SPANISH. Both semesters, by appointment. NeuenSchwander.

For further information concerning the School of Education, address F. J. Kelly, Dean, University of Kansas.



FOURTEENTH SUMMER SESSION OF THE UNIVERSITY
OF KANSAS.

June 8 to July 19, and July 20 to August 16, 1916.

CONTENTS OF THIS BULLETIN.

| | | | |
|---|----|------------------------------------|----|
| Admission..... | 13 | LIST OF COURSES: | |
| Amount of Credit..... | 14 | Anatomy..... | 17 |
| Calendar..... | 2 | Astronomy..... | 18 |
| Climatic Conditions..... | 11 | Bacteriology..... | 18 |
| Correspondence Study..... | 12 | Botany..... | 18 |
| Credit toward Degrees..... | 14 | Chemistry..... | 19 |
| Description of Courses..... | 17 | Design and Drawing..... | 21 |
| Equipment..... | 9 | Economics..... | 21 |
| Faculty..... | 3 | Education..... | 22 |
| Fees and Expenses..... | 16 | Engineering..... | 24 |
| General Information..... | 11 | English..... | 26 |
| Graduate Work..... | 15 | Entomology..... | 27 |
| Lectures and Entertainments..... | 11 | Geology..... | 29 |
| Nature of Courses..... | 14 | German..... | 29 |
| Other State Teachers' Certificates..... | 15 | History and Political Science..... | 30 |
| Purposes of the Summer Session..... | 8 | Home Economics..... | 31 |
| Recommendation of Teachers..... | 12 | Journalism..... | 32 |
| Recreation..... | 11 | Latin..... | 33 |
| Registration..... | 14 | Law..... | 33 |
| Summer Session Kansan..... | 12 | Mathematics..... | 34 |
| Time of Beginning Work..... | 13 | Music..... | 35 |
| University Teachers' Diploma..... | 15 | Philosophy and Psychology..... | 36 |
| | | Physical Education..... | 37 |
| | | Physics..... | 39 |
| | | Physiology..... | 40 |
| | | Public Speaking..... | 40 |
| | | Romance Languages..... | 41 |
| | | Sociology..... | 43 |
| | | Zoology..... | 44 |

LAWRENCE, KANSAS.

CALENDAR, 1916.

- Jan. 31, Monday—Second semester begins.
April 3, Monday—Second half-semester begins.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 6, Tuesday, 10:30 a. m.—Annual Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Opening of Summer Session.
June 23 and 24, Friday and Saturday—The Coburn Players.
July 19, Wednesday—Close of six-weeks courses.
July 20, Thursday—Opening of four-weeks courses.
Aug. 16, Wednesday—Close of four-weeks courses.
Sept. 13, Wednesday—Opening of fall semester.
Sept. 11-13—Examinations and registration.
Sept. 15, Friday—First general assembly; opening address.
Nov. 30 and Dec. 1—Thanksgiving recess.
Dec. 16, Saturday—Christmas recess begins.

FACULTY.

FRANK STRONG, Chancellor of the University and President of the Faculties.

A. B. Yale, 1884; A. M. Yale, 1893; Ph. D. Yale, 1897; LL. D. Oregon, Baker, Kansas Agricultural College, 1909.

FREDERICK JAMES KELLY, Director of the Summer Session and Professor of Education.

A. B. Nebraska, 1902; Ph. D., Columbia, 1914.

Instructors from Other Institutions.

WILLIAM T. BAWDEN, Ph. D., Specialist in Industrial Education, United States Bureau of Education.

JESSE E. BOND, Ph. D., Professor of Sociology, University of Idaho.

ARTHUR G. CANFIELD, A. M., Professor of the Romance Languages and Literatures, University of Michigan.

GEORGE A. DEAN, M. S., Professor of Entomology, Kansas State Agricultural College.

JOSEPH M. GWINN, A. M., Superintendent of Schools, New Orleans, La.

GEORGE MELCHER, A. B., Director of Research, Public Schools, Kansas City, Mo.

LOUIS W. RAPEER, Ph. D., Professor of Education, Pennsylvania State College.

HARRY B. WILSON, A. M., Superintendent of Schools, Topeka, Kan.

WILLIAM B. WILSON, M. S., Professor of Biological Science, Ottawa University.

Instructors from the University of Kansas.

JAMES WOODS GREEN, Professor of Law.

A. B. Williams, 1866; A. M. Williams, 1886.

FRANK WILSON BLACKMAR, Dean of the Graduate School, and Professor of Sociology.

A. B. University of the Pacific, 1881; A. M. University of the Pacific, 1884; Ph. D. Johns Hopkins, 1889.

CHARLES GRAHAM DUNLAP, Professor of English Literature.

A. B. Ohio Wesleyan, 1883; A. M. Ohio Wesleyan, 1899; Litt. D. Princeton, 1892.

CARL ADOLPH PREYER, Professor of Piano, Counterpoint, Canon, and Fugue.

Mus. D. Baker, 1909.

OLIN TEMPLIN, Professor of Philosophy.

A. B. Kansas, 1886; A. M. Kansas, 1890.

EDWIN MORTIMER HOPKINS, Professor of Rhetoric and English Language.

A. B. Princeton, 1888; A. M. Princeton, 1890; Ph. D. Princeton, 1894.

ERASMUS HAWORTH, Professor of Geology, Mineralogy and Mining.

B. S. Kansas, 1881; M. S. Kansas, 1884; Ph. D. Johns Hopkins, 1888.

ARTHUR TAPPAN WALKER, Professor of Latin Language and Literature.

A. B. New York, 1887; A. M. Vanderbilt, 1892; Ph. D. Chicago, 1898.

WILLIAM CHASE STEVENS, Professor of Botany.

B. S. Kansas, 1885; M. S. Kansas, 1893.

ARVIN SOLOMON OLIN, Professor of Education.

A. B. Ottawa, 1892; A. M. Kansas, 1894; LL. D. Ottawa, 1915.

WILLIAM LIVESAY BURDICK, Professor of Law.

A. B. Wesleyan, 1882; A. M. Wesleyan, 1885; Ph. D. Grant, 1884; LL. B. Yale, 1898.

IDA HENRIETTA HYDE, Professor of Physiology.

A. B. Cornell, 1891; Ph. D. Heidelberg, 1896.

WILLIAM HAMILTON JOHNSON, Professor of Education.

A. B. Kansas, 1885; A. M. Kansas, 1891.

JAMES NAISMITH, Professor of Physical Education.

A. B. McGill, 1887; M. D. Gross Medical, 1898; M. P. E. Springfield Y. M. C. A. 1910.

SAMUEL JOHN HUNTER, Professor of Entomology.

A. B., A. M. Kansas, 1893.

HAMILTON PERKINS CADY, Professor of Chemistry.

A. B. Kansas, 1897; Ph. D. Kansas, 1903.

JOHN SUNDWALL, Professor of Anatomy.

B. S. Chicago, 1903; Ph. D. Chicago, 1906; M. D. John Hopkins, 1912.

EDMUND HOWARD HOLLANDS, Professor of Philosophy.

Ph. D. Cornell, 1899; A. M. Cornell, 1901; Ph. D. Cornell, 1905.

HENRY WILBUR HUMBLE, Professor of Law.

A. M. Cornell, 1908; LL. B. Cincinnati, 1904.

GOLDWIN GOLDSMITH, Professor of Architecture.

Ph. B. Columbia, 1896.

FRANK BURNETT DAINS, Professor of Chemistry.

Ph. B. Wesleyan, 1890; M. S. Wesleyan, 1891; Ph. D. Chicago, 1898.

ELMER FRANKLIN ENGEL, Professor of German.

A. B. Kansas, 1892; A. M. Harvard, 1898.

JOHN NICHOLAS VAN DER VRIES, Professor of Mathematics.

A. B. Hope, 1896; A. M. Hope, 1899; Ph. D. Clark, 1901.

ARTHUR MACMURRAY, Professor of Public Speaking.

A. B. Kansas, 1896; M. O. Ott Schools of Expression, 1904.

ELIZABETH CADE SPRAGUE, Professor of Home Economics.
Graduate, Boston Normal School of Household Arts, 1898.

ROBERT MORRIS OGDEN, Professor of Psychology.
B. S. Cornell, 1901; Ph. D. Würzburg, 1903.

WILLIAM BELL DOWNING, Professor of Voice.
Graduate, Drake, 1905.

ARTHUR JEROME BOYNTON, Professor of Economics.
A. B. Harvard, 1901; A. M. Columbia, 1902.

CHARLES HAMILTON ASHTON, Professor of Mathematics.
A. B. Union, 1887; A. M. Harvard, 1893; Ph. D. Munich, 1909.

MARTIN EVERETT RICE, Associate Professor of Physics and Electrical Engineering.
B. S. Kansas, 1891; M. S. Kansas, 1893.

DAVID LESLIE PATTERSON, Associate Professor of European History.
B. S. Pennsylvania State, 1895.

CLARENCE ADDISON DYKSTRA, Associate Professor of History.
A. B. Iowa, 1903.

ALBERTA LINTON CORBIN, Associate Professor of German.
A. B. Kansas, 1893; Ph. D. Yale, 1902.

GEORGE JUSSEN HOOD, Associate Professor of Mechanical Drawing.
B. S. Kansas, 1902.

HENRY OTTO KRUSE, Associate Professor of German.
A. B. Kansas, 1894; A. M. Kansas, 1903.

LEON NELSON FLINT, Associate Professor of Journalism.
A. B. Kansas, 1897.

CLARENCE CORY CRAWFORD, Associate Professor of European History.
A. B. Kansas, 1903; A. M. Kansas, 1904; Ph. D. Wisconsin, 1906.

VICTOR EMANUEL HELLEBERG, Associate Professor of Sociology.
A. B. Yale, 1883; LL. B. Cincinnati, 1884.

GEORGE ELLETT COGHILL, Associate Professor of Anatomy.
A. B. Brown, 1896; M. S. New Mexico, 1899; Ph. D. Brown, 1902.

MARGARET LYNN, Associate Professor of English Literature.
B. S. Tarkio, 1899; A. M. Nebraska, 1900.

ARTHUR LESLIE OWEN, Associate Professor of Romance Languages.
A. B. Vermont, 1906; A. M. Illinois, 1909.

HERMAN CAMP ALLEN, Associate Professor of Chemistry.
A. B. McPherson, 1904; A. M. Kansas, 1905; Ph. D. Cornell, 1912.

WILLIAM WATSON DAVIS, Associate Professor of American History.
B. S. Alabama Polytechnic Institute, 1903; M. S. Alabama Polytechnic Institute, 1904;
A. M. Columbia, 1906; Ph. D. Columbia, 1913.

CLARENCE ANTHONY JOHNSON, Associate Professor of Electrical Engineering.
B. S. Nebraska, 1906.

- ALICE LITTLEJOHN GOETZ, Associate Professor of Physical Education.
Graduate, Sargeant Normal School, 1902; M. D. Howard University Medical, 1906.
- ULYSSES GRANT MITCHELL, Associate Professor of Mathematics.
A. B. Kansas, 1906; A. M. Kansas, 1907; Ph. D. Princeton, 1910.
- CHARLES ALBERT SHULL, Associate Professor of Botany.
B. S. Chicago, 1905.
- FRANK EVERETT JONES, Assistant Professor of Pattern Making and
Founding.
- HARRIET GREISSINGER, Assistant Professor of Piano.
Mus. B. Kansas, 1895.
- EDWARD MAURICE BRIGGS, Assistant Professor of German.
A. B. Nebraska, 1904; A. M. Kansas, 1908.
- LULU GARDNER, Assistant Professor of Rhetoric.
A. B. Kansas, 1905.
- GEORGE ELLSWORTH PUTNAM, Assistant Professor of Economics.
A. B. Kansas, 1907; A. M. Yale, 1908; B. Litt. Oxon, 1911.
- NOBLE PIERCE SHERWOOD, Assistant Professor of Bacteriology.
B. S. Kansas, 1905; A. M. Kansas, 1911.
- THEODORE TOWNSEND SMITH, Assistant Professor of Physics.
A. B. Harvard, 1907; A. M. Harvard, 1908.
- PAUL VANCE FARAGHER, Assistant Professor of Chemistry.
A. B. Kansas, 1909; Ph. D. Massachusetts Institute of Technology, 1913.
- JOHN DILLER GARVER, Assistant Professor of Mechanical Engineering.
B. S. Kansas, 1910.
- RALPH EMERSON CARTER, Assistant Professor of Education.
Ph. B. Franklin, 1906; A. M. Chicago, 1911.
- FRANK LOGAN BROWN, Assistant Professor of Mechanics.
B. S. in C. E. Colorado, 1911.
- NADINE NOWLIN, Assistant Professor of Zoölogy.
A. B., A. M., Kansas, 1903.
- ANNA LOUISE SWEENEY, Assistant Professor of Piano.
Mus. B. Kansas, 1906.
- HERMAN DOUTHITT, Assistant Professor of Zoölogy.
A. B. Oklahoma, 1910; A. M. Illinois, 1911.
- GEORGE WEATHERWORTH STRATTON, Assistant Professor of Chemistry.
A. B. Colorado, 1907; A. M. Ohio State, 1909; Ph. D. Ohio State, 1912.
- CHESTER ARTHUR BUCKNER, Assistant Professor of Education.
A. B. Iowa, 1909; A. M. Iowa, 1911.
- ELLIS BAYLEY STOUFFER, Assistant Professor of Mathematics.
A. B., A. M. Drake, 1907; Ph. D. Illinois, 1911.
- WILLIAM MCGLASHAN DUFFUS, Assistant Professor of Economics.
A. B. Leland Stanford, 1910; A. M. Wisconsin, 1913.

JACOB OSCAR JONES, Assistant Professor of Hydraulics.

B. S. Kansas, 1912.

MAY GARDNER, Instructor in Romance Languages.

A. B. Kansas, 1897.

JOHN JEFFERSON WHEELER, Instructor in Mathematics.

A. B. Indiana, 1905; A. M. Kansas, 1913.

HUBERT WILTFONG, Instructor in Forging.

MAUD MILLER, Instructor in Piano.

Mus. B. Kansas, 1898.

PEARL EMLEY, Instructor in Piano and Organ.

Mus. B. Kansas, 1909; Mus. M. Kansas, 1913.

EVANGELINE DOWNEY, Instructor in Home Economics.

A. B., B. S. Wyoming, 1910; A. M. Chicago, 1913.

CORA IRENE REYNOLDS, Instructor in Voice.

Mus. B. Kansas, 1912.

CHARLES WESLEY WHITE, Instructor in Machine-shop Practice.

OSCAR ROCKLUND, Instructor in Foundry.

AVIS GWINN, Instructor in Home Economics.

A. B. Illinois, 1914.

PETER A. F. APPELBOOM, Instructor in Romance Languages.

RAY Q. BREWSTER, Assistant Instructor in Chemistry.

B. S. Ottawa, 1914; A. M. Kansas, 1915.

ADMINISTRATIVE COMMITTEE.

F. J. KELLY, Chairman.

ARVIN OLIN.

A. T. WALKER.

H. A. MILLIS.

P. F. WALKER.

S. J. HUNTER.

F. W. BLACKMAR.

The Summer Session.

PURPOSES.

In accordance with a general desire to increase the usefulness of the University and to bring its resources nearer to the people of the state, the Summer Session is conducted to meet the demands of the following classes of persons:

1. *Instructors in colleges* who may wish the opportunity of further study, of observing the work in their subjects as pursued at the University of Kansas, and of using the laboratories and library of the University.

2. *College graduates* who wish to engage in research or to work for advanced degrees.

3. *Superintendents and principals* who wish to acquaint themselves with recent progress in education or to study special problems.

4. *Teachers and supervisors* who wish to add to their academic and professional equipment, to become familiar with the latest and best methods, and thus prepare to make their work more efficient.

5. *Students* who wish to enlarge the content of their university course, or to shorten their period of residence.

6. *Candidates for certificates* who need academic courses, and courses in education.

7. *Students preparing to enter the University*, who need courses to enable them to meet the entrance requirements. No special classes are conducted for such students, but entrance credits may be earned in botany, chemistry, economics, English, French, German, mathematics, physiology, psychology, Spanish, zoölogy.

EQUIPMENT.

BUILDINGS AND GROUNDS.

The University campus comprises about 160 acres, and is located on Mount Oread, in the southwest part of the city of Lawrence.

On this campus there are in all sixteen buildings thus far erected, fourteen of them used for purposes of instruction. There are two other buildings at Rosedale devoted to the work of the School of Medicine.

North College, containing eighteen rooms, is occupied by the department of music of the School of Fine Arts.

Fraser Hall, or the main building, contains fifty-four rooms, and is occupied by the administration offices, by some departments of the College of Liberal Arts and Sciences and by the School of Education. In Fraser Hall is the University assembly room, with the pipe organ.

Medical Hall, containing twelve rooms, is occupied by the departments of journalism and physiology.

Snow Hall of Natural History, containing twenty-five rooms, is used for the purposes of instruction in all departments of biology.

Spooner Library contains the University's collection of books and pamphlets, preserved in a fire-brick stack with a capacity of 100,000 volumes. In addition, there are, including the reading room, seventeen rooms.

Blake Hall, devoted to the departments of physics and electrical engineering, contains sixteen rooms, including three large lecture rooms and three large laboratories.

The Fowler Shops is a building 224 by 50 feet, and two stories high, containing the rooms for all bench, lathe, and forge work, with a large amount of valuable machinery for the training and use of students of electrical, civil, and mechanical engineering.

The Chemistry Building, 187 by 70 feet, and four stories high, is occupied by the classrooms and laboratories in chemistry and pharmacy.

The Natural History Museum contains the invaluable collections in biology, together with the offices and laboratories for the curators in zoölogy, entomology, and paleontology. A portion of the work of the School of Medicine is also done in this building.

Green Hall, erected in 1905, is a building 120 by 60 feet, and is devoted entirely to the purpose of the School of Law.

The Robinson Auditorium-Gymnasium, erected in 1907, is 178 by 144 feet, with an average width of 90 feet. The arrangement and equipment of this building are modern in every particular. It is one of the finest gymnasiums in the West.

Marvin Hall, erected in 1909, is a four-story structure, 187 by 64 feet, with a wing 56 by 29 feet. It contains equipment for the general work of the School of Engineering.

The Power Plant and Mechanical Laboratory, erected in 1909, is used for the purposes indicated by its name.

Haworth Hall, erected in 1909, is 110 feet long by 60 feet wide, and three stories high. It contains lecture rooms, museums, and laboratories for mineralogy, petrography, mining, and ore dressing.

The east wing of the Administration Building, erected in 1911, is occupied by some departments of the College of Liberal Arts and Sciences.

LIBRARY, LABORATORIES, AND ILLUSTRATIVE APPARATUS.

The Summer Session commands the entire equipment of the library of 125,000 volumes and pamphlets, and the laboratories of the University.

The work in botany, entomology, zoölogy, and geology is supported by the cabinet collections, which contain upwards of 250,000 specimens, and by ample laboratories.

Physics, chemistry and pharmacy, and the biological sciences are taught in separate and well-furnished buildings with commodious laboratories for special research as well as for classroom work, and supplied with much valuable modern apparatus.

The Greek and Latin departments have at their command a large number of casts, photographs, plates, and stereopticon slides of ancient views, portraits, buildings, statues, paintings, vases, and manuscripts.

The departments of history and modern languages are provided with wall maps and charts, and a considerable collection of photographs.

The department of mathematics has a large collection of mathematical models of the best German make.

The School of Education has a growing educational museum of considerable value, including ancient and modern textbooks, former and present-day school appliances and equipments, slides, maps and charts.

The University library is open every day of the year except Sundays and legal holidays. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library for three weeks.

The department of abnormal psychology is equipped with a very complete outfit of instruments and devices for detecting subnormality in children. They are housed in a specially constructed laboratory where practical tests may be conducted effectively.

GENERAL INFORMATION.

CLIMATIC CONDITIONS.

The chief objection that has been urged against the Summer Session is the claim that the climate of Kansas in summer is too oppressive for effective study, but a comparison of conditions with those in other states leads to the conclusion that the heat of Kansas is no more trying than that of other states in which very large summer schools exist. Moreover, there is no cooler place in all Kansas in summer than the breezy heights of Mount Oread. The heavy walls of the buildings, the plentiful shade of the campus and the perpetual breeze make this the most suitable place in the state for intellectual work during the summer. Furthermore, it is noted that the teachers of Kansas have for years and by thousands endured the heat and the pressure of summer institutes, and the Summer Session at the University is a moderate trial in comparison.

The electric cars now make regular and frequent trips to the top of the hill, thus obviating the necessity of a walk that was sometimes trying.

RECREATION.

The gymnasium and the shady campus give such ample facilities for recreation that study may be combined with an outing. On account of its location the gymnasium is always cool and breezy. Such sports as tennis may be played under the protection from the sun. The large floor is used for tennis, volley ball, and basket ball. The first floor is reserved for apparatus work and is always accessible, the men and women having separate gymnasiums. There are seven handball courts, which are available at all hours. Boxing, wrestling and fencing can be done in privacy in the rooms provided for these sports. The shower baths are commodious, and can be regulated to suit the individual. The swimming pool is a most attractive feature of the gymnasium. It is 20 by 50 feet, lined with enamel brick, and well lighted, making it one of the pleasantest in the country. Swimming classes will be organized for those who can not swim; fancy strokes, diving, and life-saving methods will be taught to those who can. (See courses in "Physical Education.")

The Kansas river affords a fine boating course, and McCook field furnishes excellent grounds for baseball, tennis, track events and lacrosse. Nine excellent courts are available for tennis on McCook field and five others near the gymnasium. In addition to these, the students at the Summer Session enjoy the folk dances and group games which require neither court nor apparatus.

LECTURES AND ENTERTAINMENTS.

During the Summer Session frequent public lectures will be given by faculty members and others. Among the noteworthy features the following may be mentioned as of especial interest:

(1) Five experts in their respective fields of education have been engaged to conduct a composite course in "Special Problems in School Administration." Each of these experts will conduct this course for one week, and in addition will deliver during his stay at the University several addresses open to the public. These five specialists are:

William T. Bawden, Ph. D., specialist in industrial education, Bureau of Education, Washington, D. C.

Louis W. Rapeer, Ph. D., professor of education, State College, Pennsylvania, author of recent books on School Health Administration.

H. B. Wilson, superintendent of city schools, Topeka, author of "Motivating Children's Study."

George Melcher, director of research, public schools, Kansas City, Mo.

Joseph M. Gwinn, superintendent of schools, New Orleans, leader in devising plans for the rating and promotion of teachers.

(2) The Extension Division will provide, without cost to students, frequent entertainments with motion pictures. These entertainments, in addition to providing opportunity for relaxation, will demonstrate the educational value of motion pictures. A wide variety of films will be shown. Persons interested in the possibility of securing motion-picture machines or other picture apparatus, such as the stereopticon, for their home schools may get information concerning cost, operation, securing of films, available educational films, and the like from the Director of the Extension Division.

(3) The School of Fine Arts will provide occasional musical and literary entertainments, including the work of the regular members of the faculty of the School of Fine Arts. Community singing will be a feature of some of these programs.

(4) The ever-popular Coburn Players will give a series of three plays. These will be out of doors if the weather permits. The 1916 repertoire consists of "The Yellow Jacket," "The Rivals," and "Richard III."

THE SUMMER SESSION KANSAN.

The Summer Session Kansan is a triweekly college newspaper, edited by the students in journalism. It contains all official and student organization announcements, campus news and notes, editorial comment, etc.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist its own graduates and other properly prepared candidates to secure positions as teachers, and at the same time to be of service to city schools, high schools, academies and colleges which may be in need of superintendents or instructors. To this end the Committee on Recommendations preserves a complete list and record of all teachers, whether graduates of the University or not, who have studied here long enough to give the University faculty a basis for judging their ability. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position that may be made vacant. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being fully considered.

Professor W. H. Johnson is chairman of this committee. All communications regarding teachers should be addressed to him. He is in residence throughout the Summer Session, and will meet all teachers who wish to enroll.

CORRESPONDENCE-STUDY.

One of the departments of the University Extension Division is the Department of Correspondence-Study. This department and the Summer Session have at least one aim or purpose in common: to furnish instruction in college and university subjects to those persons who for any reason are unable to attend the regular sessions of the University in residence. Combinations of correspondence-study and the residence work of the Summer Session are possible and recommended. Teachers especially, by carrying correspondence work through the winter months and later attending the Summer Session, may accumulate credits toward a degree rapidly and effectively. At the same time the individual's earning power is preserved while he is learning.

The plan is briefly thus: Lesson sheets are prepared by regular University professors and sent to the students. Answers are written by the student at home and sent in for correction. Corrections, explanations, and suggestions are returned to the student by the professor. Every student studies and recites the whole lesson, thus coming into intimate contact with the teacher. The fees are the same as for residence study: ten dollars per year for residents, and fifteen dollars per year for nonresidents.

At present courses are offered in the following subjects:

| | | |
|--------------|-----------------------|---------------------|
| Accounting. | German. | Philosophy. |
| Advertising. | Greek. | Physics. |
| Astronomy. | High School Branches. | Physical Education. |
| Botany. | History. | Physiology. |
| Chemistry. | Journalism. | Public Speaking. |
| Economics. | Latin. | Romance Languages. |
| Education. | Mathematics. | Salesmanship. |
| Engineering. | Minerology and | Sociology. |
| English. | Geolog. | Zoölogy. |
| Entomology. | Pharmacy. | |

For the further information, details, methods of procedure, and description of courses offered, send for bulletin of the Correspondence-Study Department or call in person at the University Extension office in Fraser Hall. All communications should be addressed to the University Extension Division, The University of Kansas, Lawrence, Kan.

ADMISSION.

The classes of the Summer Session are open to all who can satisfy the instructors that their preparation is sufficient to enable them to do the work properly; that is, a student may register in the Summer Session and attend its classes without meeting the requirements for admission which are in force during the regular session, and without paying the five-dollar matriculation fee which is required of all who enter a regular session for the first time.

TIME OF BEGINNING WORK.

First Term, June 8 to July 19.

All classes meet on Thursday, June 8, at the hours scheduled in this Catalog. A full hour of work will be given in all departments on the opening day. All students should be in their classes on that day, whether they have registered or not. Regular class work will be done on both Friday and Saturday of that week, but on no other Saturday of the session. Students are permitted to register for the maximum amount of work as late as Monday, June 12, but are then seriously handicapped by the loss of three days' class work.

Those who enter later than June 12 must register for less work, because they will have to make good what they have lost in the early days of the session. And after June 12, any instructor may refuse to admit more members to his classes if the classes are uncomfortably full or if the work of the first days can not be made up satisfactorily.

Second Term, July 20 to August 16.

All classes meet on Thursday, July 20. Those who enter for the second term should have their work planned and their registration completed before that time.

REGISTRATION.

First Term, June 8 to July 19.

The days of registration are Monday, June 5, to Saturday, June 10, inclusive. Students should pay their fees at the Secretary's office and enroll at the Director's office, Room 119, Fraser Hall, as promptly as possible, preferably on the Monday, Tuesday, or Wednesday preceding the beginning of work. But late arrivals should not postpone attendance on classes for the sake of registering.

On Monday, June 12, instructors will receive from the office, lists of the students enrolled in their classes. Students whose names do not appear on those lists will not be considered members of the classes until they have registered.

Second Term, July 20 to August 16.

The days of registration for the second term are July 18, 19, and 20. The procedure outlined for the first term should be followed for the second term, except that those who have been enrolled for the first term will have no fee to pay for the second term.

NATURE OF COURSES.

The courses offered in the Summer Session are for the most part courses which are offered in the regular sessions, or modifications of such courses. Many of the courses have been selected with a view to meeting the wishes of teachers, and certain ones have been modified in some details for the same purpose. But such modifications are not so great as to make the courses unsuitable for students who do not intend to teach nor do they lower the grade of the work.

Regular students of the University must be on their guard against duplicating work. Some of the Summer Session courses, while not exactly equivalent to regular courses, are so nearly equivalent to them that credit will not be given for both. In such cases a warning is given in the statement of the course by the words, "nearly=." Students who have had the regular course may not take for credit the Summer Session course. Students who take the Summer Session course will be barred in the future from the regular course.

AMOUNT OF CREDIT.

The normal amount of credit to be obtained in the six-weeks session is five hours; the maximum is six hours. *Under no circumstances will registration for more than six hours credit be permitted in this session.* The amount of credit given for each course is indicated in the statement of that course. As there are no one-hour courses, a student may enroll in no more than—

One five-hour course, or

One three-hour and one two-hour course, or

Two three-hour courses, or

Three two-hour courses.

The maximum amount of credit to be obtained in the four-weeks session is four hours. Students who avail themselves of both sessions may thus receive a maximum of ten hours credit for their ten weeks' work—just one-third of a regular year's work.

CREDIT TOWARD DEGREES.

Almost every course offered in the Summer Session gives credit toward one of the University degrees. The statement of each course indicates the amount of credit given for its completion, and the school or schools of the University in which it will be accepted for credit. The special sections of the catalog must be consulted for a complete state-

ment of the degrees conferred by each school, and of the requirements for each degree.

The degree of bachelor of arts is conferred by the College on the completion of 120 hours of work, which must be selected under certain restrictions. All courses which give credit in the College will be accepted toward this degree. In addition, the College accepts, under certain restrictions, 15 hours from the School of Law or the School of Education; so that students who intend to take the bachelor's degree may, with proper advice, elect some courses belonging primarily to those schools.

The degree of bachelor of science in education is conferred by the School of Education on the completion of 132 hours of work, which must be selected under certain restrictions. This work must include 24 hours in education, and may include the requirements for degree of bachelor of arts, so that the 132 hours will give both degrees if properly chosen.

The degree of master of arts is conferred by the Graduate School on holders of the bachelor's degree who complete 30 hours of graduate work and comply with other regulations; therefore a student who wishes to earn this degree must select courses which give credit in the Graduate School. Note, moreover, that these courses may not be selected at random. The selection must be sanctioned in advance by the Dean of the Graduate School and the head of the department in which the student expects to do his major work.

UNIVERSITY TEACHERS' DIPLOMA.

On recommendation of the faculty of the School of Education, the University Teachers' Diploma may be granted to graduates of the School of Education, to graduates of the College, and to those receiving degrees from the Graduate School, on the following conditions:

1. Candidates for the University Teachers' Diploma are required to offer as part of their work Philosophy I (Elements of Psychology), or its equivalent, three hours in History of Education, three hours in Educational Psychology, three hours in Educational Administration, three additional hours in one or more of the three preceding groups, a teachers' course in some academic subject, and a course in practice teaching.

2. Candidates for the University Teachers' Diploma and the bachelor of arts degree must offer 125 hours of undergraduate work.

3. The record of scholarship in all the work offered for the Teachers' Diploma (125 hours) must average not lower than Grade II.

On completion of the work required for the University Teachers' Diploma the candidate is also entitled to receive from the State Board of Education the Kansas State Teachers' Certificate, which authorizes the holder to teach in any Kansas public school.

OTHER STATE TEACHERS' CERTIFICATES.

Other teachers' certificates may be received from the State Board of Education upon the completion of a specified amount of college work, including certain courses in education. Full statement concerning the requirements should be secured from the State Board of Education at Topeka. Students who expect to secure a certificate to teach in the four-year high schools with less than a four-year college course must secure their certificates before September, 1916. The education courses demanded for this certificate by the State Board of Education are offered in the Summer Session at the University.

GRADUATE WORK.

Graduates of the University of Kansas, or of other institutions of good rank, find in the Summer Session an opportunity to do graduate work which will lead to the master's degree. Thirty credit hours is the minimum requirement for this degree. A thesis is required as part of

this work. *The selection of all courses and of a subject for a thesis must be sanctioned in advance by the Dean of the Graduate School and the head of the department in which the applicant elects to do his major work.* Therefore, students desiring graduate credit for summer work should register with the Dean of the Graduate School, as well as with the Director of the Summer Session.

Since ten hours of work may be completed in one summer of ten weeks, it is now possible to secure the master's degree in three summer sessions.

FEES AND EXPENSES.

The fee for Kansas students for the Summer Session is ten dollars, for nonresidents fifteen dollars, which covers admission to all courses excepting those in music. For certain laboratory courses there will be, in addition, the cost of materials.

Lawrence is well provided with boarding houses and restaurants, and a sufficient number of these will continue in operation to supply all demands of the Summer Session. Good board, including room and service, may be had in private families at from \$5 to \$7 per week. The stewards of some of the existing student boarding clubs will remain on the ground and be prepared to carry on their organizations.

A list of rooms and boarding places is kept on file in the Registrar's office, and can be consulted at the time of registration. The number of students is so much less in summer than in the regular session that there is an abundance of rooms from which to choose.

DESCRIPTION OF COURSES.

The Summer Session courses offered by each department are numbered consecutively with Roman numerals. Arabic numerals refer to the courses as numbered in the General Catalog for 1915. For example, I (=2) means that course I of this catalog is identical with course 2 of the General Catalog. I (nearly=2) means that course I of this catalog is a modification (generally a condensation) of course 2 of the General Catalog.

College students who need freshman and sophomore credits, either to complete the required 60 hours of such work, or to complete the requirements of 5 hours in each of 6 groups, must note the Arabic numerals. Only the courses which are numbered from 1 to 49 will satisfy those requirements.

All classes meet five days a week, Monday to Friday, inclusive, and also on Saturday, June 10.

ANATOMY.

First Term, June 8 to July 19.

I (= 1, 2, 3, 4). Required of medical students. Atlases and textbooks are used as guides. The work in the laboratory is as independent as possible. Drawings and notes supplement the dissections. Quizzes are given by instructors on parts as completed. Credit is given only upon the completion of the work outlined and the passing of final examinations, both written and practical. Each course is supplemented by lectures bearing on the practical phases of the dissection.

1.—DISSECTION OF THE ARM AND THORACIC WALL. Three hours.

2.—DISSECTION OF THE LEG, PERINEUM AND ABDOMINAL WALL. Three hours.

3.—DISSECTION OF THE THORACIC AND ABDOMINAL VISCERA. Four hours.

4.—DISSECTION OF THE HEAD AND NECK. Four hours.

Lectures, 8 a. m.; laboratory, from 9 a. m. throughout the day. Laboratory fees, \$5 per course. Professor Sundwall and assistants.

II (= 6).—TOPOGRAPHICAL ANATOMY. Five hours credit in the School of Medicine. Lectures daily, 9 a. m.; laboratory daily, from 10 a. m. throughout the day. A laboratory course in human anatomy, including dissections, study of models, preparations, cross-sections. Special emphasis will be laid upon the practical phases of anatomy. This course is especially designed for physicians who desire to review anatomy. Laboratory fees, \$5. Professor Sundwall.

III (= 11).—ADVANCED WORK IN ANATOMY. Credits, hours and fees to be arranged. Opportunities will be offered advanced students and graduate physicians to carry on special dissections in which they may be interested. Professor Sundwall.

Courses 1, 2, 3, 4 are designed for medical students.

Course 6 is designed for those who wish to make a complete review of anatomy. Special emphasis will be laid on the practical side.

Course 11 is particularly designed for those who wish to specialize in some branch of medicine. In taking up a specialty a thorough knowledge of the organs and parts concerned is of fundamental importance. This course ought to appeal to physicians contemplating going away for special training, as the structures can be as readily worked out here as elsewhere, thus saving time and expense.

IV (= 7).—HISTOLOGY AND SPLANCHNOLOGY. Five hours. 9 to 10:30, with 54 additional hours of laboratory work to be arranged by conference with the instructor. A brief course on the structure of the cell, followed by a systematic study of the structure of the organs. Prerequisite, ten hours of biology. Associate Professor Coghill and assistants.

V (= 8).—EMBRYOLOGY. The study of the embryology of the chick and pig, followed by a consideration of human embryology. Two hours. Prerequisite, course 7. Hours 11 to 12, with 36 additional hours of laboratory work to be arranged by conference with the instructor. Associate Professor Coghill and assistants.

VI (= 9).—INTRODUCTORY NEUROLOGY. Lectures, readings and laboratory exercises upon the fundamentals, plan of organization and function of the nervous system, with reference primarily to psychology and pedagogy as applied to problems relating to the welfare and development of the child. Three credits. Hours 7:30 to 9:30.

This course is not accredited in the Medical School, but with certain modifications arranged by the instructors for individual cases it may be substituted for the regular course in neurology in the Medical School. Associate Professor Coghill.

ASTRONOMY.

First Term, June 8 to July 19.

I (= 10).—DESCRIPTIVE ASTRONOMY. Three hours credit in the College. 10:30 to 12. An elementary course serving as an introduction to the subject. Assistant Professor Stouffer.

BACTERIOLOGY.

First Term, June 8 to July 19.

I (= 1).—GENERAL BACTERIOLOGY. Five hours credit in the College. 7:15 to 12. This is a course in laboratory work combined with lectures, readings, and recitations. In the laboratory the student is made acquainted with the usual bacteriological technic, such as preparation of culture media, cultivation and staining of bacteria, study of the forms of bacteria under the microscope, study of the physiological action of bacteria, and their relation to foods, sanitation, and infectious diseases. Such matters as fermentation, immunity and the control of epidemics will also be considered. A knowledge of elementary chemistry is a necessary prerequisite. Assistant Professor Sherwood.

II (= 61).—SPECIAL PROBLEMS IN BACTERIOLOGY. Two to six hours, by appointment. Special work along some definite line with a view to obtaining familiarity with a particular kind of laboratory procedure. Assistant Professor Sherwood.

BOTANY.

First Term, June 8 to July 19.

I (= 2).—THE LIVING PLANT; WHAT IT TEACHES ABOUT LIFE, AND ITS USES. Five hours credit in the College or School of Pharmacy, or as an entrance unit. 7:30 to 12. Although this course is open to those who have never studied botany, it is offered largely to help high-school teach-

ers of the subject. The standard course in elementary botany will be worked through, and the methods of preparing subjects for study and of conducting laboratory and field work will be given. Teachers who have had difficulty in giving a year's work in botany under high-school conditions will be benefited by this course. Facilities will be offered for collecting and preserving abundant materials for class work. Professor Stevens.

II (= 61).—TREES AND SHRUBS. Three hours credit in the College. 10:30 to 12. Their nature and relationship; their culture and uses on the home grounds, streets, parks and forest plantations. This course is to meet the demand that comes from a widespread awakening over this country to the need of accurate information concerning the nature of trees and shrubs, the best kinds to plant for different purposes and in different localities, and a rational method of caring for them after planting. Professor Stevens.

III (nearly = 3).—PLANT PHYSIOLOGY. Three hours credit in the College. 7:30 to 9. A careful survey of the processes of plant life, absorption, transpiration, food manufacture, digestion, respiration, response, etc. This course is especially designed to meet the needs of the teachers of botanical science in the high school, as it provides laboratory exercises of the most interesting kind, with simple and inexpensive apparatus. Associate Professor Shull.

IV (nearly = 60).—ELEMENTS OF AGRICULTURE. Three hours credit in the College. 10:30 to 12. This course deals with the scientific principles underlying agriculture. Through the lectures and library work, the student will be acquainted with the most recent advances in the subject. The laboratory exercises will prove helpful and suggestive to prospective teachers of the subject. Associate Professor Shull.

Second Term, July 20 to August 16.

V (nearly = 1).—GENERAL MORPHOLOGY OF PLANTS. Four hours credit in the College. 7:30 to 12. A general survey of the great groups of plants. Lectures, recitations, and laboratory study of types, showing the important steps in the evolution of the plant kingdom. Professor Wilson.

VI (nearly = 55).—MORPHOLOGY OF THALLOPHYTES. Two hours credit in the College or the Graduate School. By appointment. An advanced course on the algæ. Particular attention will be given this summer to the algæ of the town and the city water supplies of Kansas. An abundance of material is available from the collections of the Biological Survey. Professor Wilson.

CHEMISTRY.

First Term, June 8 to July 19.

Since the following courses involve laboratory work, the student will be obliged to procure a coupon book at the office of the Secretary. Coupons will be removed from time to time to cover the expenses of the course. The apparatus needed will be loaned without expense, but students are required to pay for apparatus actually broken, destroyed, or used up.

I (=1).—ELEMENTARY CHEMISTRY. Five hours credit in the College or School of Pharmacy, or as an entrance unit. 7:15 to 12. The study of the chemical elements and their compounds. Open to undergraduates who have no credit for high-school chemistry. Assistant Professor Stratton.

II (=2).—INORGANIC CHEMISTRY. Four or five hours credit in the College or School of Engineering. 7:15 to 12. Those desiring credit in the College or in the chemical engineering course will do full work and

receive five hours credit. Others may do all the lecture and recitation work, with less laboratory work, and receive four hours credit. Professor Cady.

III (=3).—QUALITATIVE ANALYSIS. Five hours credit in the College, School of Pharmacy, School of Medicine, or Chemical Engineering course; four hours credit in the other engineering courses. 7:15 to 12. This course will include lecture and laboratory work. This course must be preceded by course II, but pharmacy and medical students who have completed one course in elementary chemistry will be admitted to this course, and given credit in those schools. Assistant Professor Faragher.

IV (=54).—QUANTITATIVE ANALYSIS. Two, three, or five hours credit in the College or School of Engineering. 7:15 to 12. This course will consist of laboratory work, recitations, and problems. The work will be arranged according to the requirements of the student. At least six hours of laboratory work daily will be required for five hours credit. Assistant Professor Stratton.

V (=4a).—ELEMENTARY ORGANIC CHEMISTRY. Five hours credit in the College, School of Medicine, or School of Pharmacy, but not in the School of Engineering. 7:15 to 12. Prerequisite, ten hours chemistry. Designed to cover briefly the aliphatic and aromatic series, to discuss the more important derivatives and to show their relationships and applications. Professor Dains.

VI (=60 or 160).—ADVANCED ORGANIC CHEMISTRY or (=104) ORGANIC PREPARATIONS (Advanced). Five hours credit in the College or the Graduate School (60 or 160); five hours credit in the Graduate School (104). 7:15 to 12. Professor Dains.

VII (=102).—ORGANIC CHEMISTRY. Five hours credit in the Graduate School. 7:15 to 12. This course offers, to those who have proper preparation, a chance for more extended study and original investigation. Professor Dains.

VIII (=90 or 190).—TEACHERS' COURSE IN CHEMISTRY. Two hours credit in the School of Education or the Graduate School. 11 to 12. Pedagogics and technique of instruction in elementary chemistry. Professor Cady.

General laboratory assistant, Mr. Brewster.

Second Term, July 20 to August 16.

IX (nearly = 54).—BEGINNING QUANTITATIVE ANALYSIS. Four hours credit in the College or School of Engineering. Associate Professor Allen.

X (=108).—GAS ANALYSIS. Two hours credit in the Graduate School. A laboratory course. Gill's, Hempel's, or Dennis' Gas Analysis. Prerequisite, course 54. Associate Professor Allen.

XI (=56 or 156).—WATER ANALYSIS. Three hours credit in the College or Graduate School. Prerequisite, course 54. Associate Professor Allen.

XII (= 55 or 155).—ADVANCED QUANTITATIVE ANALYSIS. Two, three, or four hours credit in the College or the Graduate School. Associate Professor Allen.

XIII (= 101).—RESEARCH IN QUANTITATIVE ANALYSIS. Two, three, or four hours credit in the Graduate School. This course may include original investigations or comparison of published methods. Associate Professor Allen.

DRAWING AND DESIGN.

First Term, June 8 to July 19.

I. ELEMENTARY DRAWING. No credit. 7:30 to 9, or 9 to 10:30. A course to assist teachers in the practical problems of blackboard or notebook illustrating.

II (nearly = Education 95).—TEACHERS' COURSE IN DRAWING AND DESIGN. Three hours credit in the School of Education. 10:30 to 12. The function of drawing and design in the public schools, materials, equipment, and course of study will be studied along with practice in drawing and design.

ECONOMICS AND COMMERCE.

First Term, June 8 to July 19.

I (nearly = 1).—ELEMENTS OF ECONOMICS. Three hours credit in the College. 7:30 to 9. This course is essentially a concrete analytical study of the laws governing man in his relation to wealth. It not only furnishes a basis for the scientific understanding of economic affairs, but serves as the foundation for all other courses in economics. Assistant Professor Putnam.

II (nearly = 57).—CORPORATIONS AND TRUSTS. Two hours credit in the College or in the Graduate School. 9 to 10. A general course dealing with the economic causes and consequences of the combination movement in industry. The following are the leading topics studied: Modern forms of business organization; incorporation and regulation of companies; economies of combination; pools, trusts, and holding companies; analysis of the trust problem; public policy. Prerequisite, course I. Assistant Professor Putnam.

III (= 51).—BANKING. Three hours credit in the College or in the Graduate School. 7:30 to 9. The principles of banking are studied as represented in the functions of deposit, discount, and issue, and also the principal banking systems of Europe and America, both as to the historical steps in their development and as to their present forms and methods. Prerequisite, course I. Professor Boynton.

IV (= 56).—RAILWAY RATES AND REGULATION. Two hours credit in the College or in the Graduate School. 10 to 11. A study of the theory of railway rates and of rate making in practice; problems of local and personal discrimination; adjustments due to geographical location and market competition; railway agreements; experience of railway commissions and the work of the Interstate Commerce Commission; recent legislation, state and national, relating to railway transportation. Prerequisite, course I. Professor Boynton.

V.—SEMINAR. One to four hours credit in the Graduate School. Hour to be arranged. This course is designed especially for graduate students engaged in the preparation of theses. Professors Boynton and Putnam.

Second Term, July 20 to August 16.

VI (nearly = 4).—COMMERCIAL GEOGRAPHY. Two hours credit in the College. 7:30 to 9. The localization of industry is the central problem of this course. The geographic division of labor is explained so far as possible in terms of nature, man, and accumulated goods. The chief products of the different countries and international trade in them are studied. Tariffs and commercial institutions are taken up. Assistant Professor Duffus.

VII (nearly = 63).—LIFE INSURANCE. Two hours credit in the College or in the Graduate School. 10:30 to 12. The general economic nature of risk; theory of life insurance; calculation of premiums; evolution and organization of companies; policies; reserve, surplus and dividends; selection of lives; investment of funds; relation of the state to insurance. Prerequisite, course I. Assistant Professor Duffus.

EDUCATION.

The work in education is so planned for the Summer Session that for teachers of experience or for candidates for a teaching certificate or the degree of B. S. in education, or for the degree of A. M., there may be from year to year some progressive sequence possible in their election of these professional subjects. Provision is hence made for alternations each session of the more advanced courses. The course in educational psychology and one elementary course in history of education are strictly introductory courses, and should precede other education courses.

Technically, the following courses do not give credit in the College; but as the College accepts 15 hours credit from the School of Education, these courses, as well as the teachers' courses listed under the several departments, may be taken by candidates for the A. B.

First Term, June 8 to July 19.

I (= 50).—HISTORY OF ANCIENT AND MEDIAEVAL EDUCATION. Three hours credit in the School of Education or in the Graduate School. 7:30 to 9. This course begins with a study of the education of primitive peoples and shows the enlargement, modification, and application of the principles involved as the social groups and nationalities are developed. In the pre-Christian period the main topics are the Confucian influence on Chinese life and thought, the significance of caste in Hindoo education, the Jewish concept of theocracy in education, the extent and character of Egyptian education, the development of Greek education with its variant types in Sparta and Athens, and the practical character of Roman education and its later conformity to the Greek type. In the Christian period are included studies of the conflict between Christian and pagan learning, the development of the seven liberal arts, the rise of the monastery and cathedral schools, the educational revival under Charlemagne and Alcuin, the rise and decline of Mohammedan learning, the rise of universities, and the early phases of the Renaissance movement. In working out these topics the endeavor is made to develop clear notions of the fundamental principles, practice, systems and educational leaders and theorists of the times and peoples studied. Professor Olin.

II (= 63).—EDUCATION IN AMERICA. Three hours credit in the School of Education or in the Graduate School. 9 to 10:30. This course will include a study of the origin and development of the educational ideals, institutions and systems of the colonial period; the evolution of the academy, high school, professional school; public support and control of schools; graded systems and supervision; the education of girls and women; manual and vocational instruction; and the work of leading educators and theorists, Mann, Willard, Howe, Gallaudet, Barnard, Eliot, Harris. Professor Olin.

III (= 61).—HIGH-SCHOOL ADMINISTRATION. Three hours credit in the School of Education or in the Graduate School. 9 to 10:30. A preliminary study will be made of the early development of the secondary school and its differentiation from other types of institutions. The course is based upon the study of the following problems: meaning of secondary education; the high school as an institution of democracy; the organization of the high school; the curriculum and daily program; student activities, their organization and control; the teaching staff; material equipment; vocational and moral guidance.

Each student will be required to make an intensive study of some problems in which he is specially interested. Professor Johnson.

IV (= 75).—PSYCHOLOGY OF HIGH-SCHOOL SUBJECTS. Three hours credit in the School of Education or in the Graduate School. 10:30 to 12. (This course satisfies the state and University requirements in educational psychology.) Instead of making the different mental proc-

esses the basis of organization for the discussion of learning in schools, the high-school subjects are treated separately with reference to the mental processes and psychological principles involved. Assistant Professor Carter.

V (= 67).—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours credit in the School of Education or in the Graduate School. 8 to 9. The course is regularly a more intensive treatment of parts of the educational psychology and offers considerable opportunity for special individual reading or investigation. This summer particular emphasis will be placed on psychological phases of some of the topics very generally discussed in current educational literature. Of these, supervised study, individual differences, vocational education and vocational guidance will receive the most attention. Assistant Professor Carter.

VI.—SPECIAL PROBLEMS IN EDUCATIONAL ADMINISTRATION. Two hours credit in the School of Education or in the Graduate School. 8 to 9. In addition to the introductory discussion held on June 8, 9, and 10, and the concluding discussion on July 17, 18, and 19, the course will consist of a systematic treatment of five of the most significant topics in the field of school administration, each topic handled by a specialist in that particular phase of the subject. (See introductory statement concerning these men.) Assigned readings will be required for each topic.

June 11-16, Industrial Education, William T. Bawden.

June 19-23, School Health, Louis W. Rapeer.

June 26-30, Motivating School Work, H. B. Wilson.

July 3-7, School Efficiency Tests, George Melcher.

July 10-14, Rating and Promotion of Teachers, James M. Gwinn.

The course will be in charge of Professor Johnson.

VII (= 73).—SUPERVISION OF CITY SCHOOLS. Two hours credit in the School of Education or in the Graduate School. 11 to 12. Special emphasis will be laid upon the supervision of instruction. In this the effort will be to derive the criteria by which to judge the value of the teacher's work, and the principles of criticism by which the teacher may be most benefited by the superintendent's visit to her classroom. Standard tests and scales for the measurements of elementary school work will be considered as aids in supervision. Professor Kelly.

VIII.—EDUCATIONAL MEASUREMENTS. Three hours credit in the School of Education or in the Graduate School. 9 to 10:30. This course involves a consideration of the standards and scales for the measurement of educational attainment, together with the technique of applying these to educational products. School surveys will be studied to illustrate the practical value of quantitative standards in determining the efficiency of school achievements. Assistant Professor Buckner.

IX (= 53).—SOCIAL EDUCATION. Two hours credit in the School of Education or in the Graduate School. 11 to 12. A study of the response of the school to changing social demands, and the initiative which it should take in creating better social conditions. The influence, in the past, of social conditions upon educational aims, functions, organizations, curricula, and methods, as well as the present social demands which are tending to further development and changes, will be considered. Suitable plans for social development of elementary and secondary school students will be outlined. Consideration will also be given to the function of the school in connection with the social life of the community. The purpose of the course is to acquire a workable theory of education for social progress and to survey practical applications of this as revealed by the social or community center movement. Assistant Professor Buckner.

Second Term, July 20 to August 16.

X.—THE HIGH-SCHOOL CURRICULUM. Two hours credit in the School of Education or in the Graduate School. 9 to 10:30. A study of the problems involved in the selection and organization of the subject matter

taught in the high school. The theoretical and practical aspects will be considered in the light of recent tendencies. Special attention will be given to the curriculum of the Junior high school. Assistant Professor Buckner.

XI (nearly = 51).—HISTORY OF MODERN EDUCATION. Two hours credit in the School of Education or in the Graduate School. 7:30 to 9. This course is a study of the modern movements in education and the leaders who exemplify them; the realistic movement, as shown in England by Bacon and in Germany by Comenius; the disciplinary conceptions as advocated by Locke; the naturalistic tendency as exemplified by Rousseau in France and Basedow in Germany; the psychological tendency, as shown in the work of Pestalozzi, Herbart, and Froebel; the scientific tendency, as advocated by Spencer and Huxley; the sociological tendency, as illustrated in the work of Fellenberg, Bell and Lanchester, and Horace Mann; the movement for freer education of women, led by Mrs. Willard and Miss Lyon; the development of education for defectives, as illustrated in the work of De l'Épée, Heinecke, Gallaudet, and Howe; and an analysis of present-day educational needs and tendencies. Professor Johnson.

XII (nearly = 66).—SCHOOL RECORDS AND STATISTICS. Two hours credit in the School of Education or in the Graduate School. 10:30 to 12. The course will begin with an introduction to statistical method as applied to educational problems. This will be followed by a critical examination of some of the representative statistical investigations of recent years. Individual record cards, school costs and accounting, and reports of superintendents and boards of education will be studied from the viewpoint of improving the gathering and keeping of school records and statistics. Emphasis will be placed upon the graphic representation of school facts in all cases which lend themselves to such treatment. Assistant Professor Buckner.

ENGINEERING.

First Term, June 8 to July 19.

The following subjects are for credit in the School of Engineering, except where otherwise indicated. All hours are by appointment.

ENGINEERING DRAWING.

I (= 1).—ENGINEERING DRAWING. One and one-third hours credit. Engineering lettering in pencil and in ink. Free-hand perspective sketching of simple machine parts. Associate Professor Hood.

II (= 2).—ENGINEERING DRAWING. Two-thirds hour credit. Elementary mechanical drawing. Making working drawings of simple machine parts. Detailing machine parts. Isometric drawing. Pencil-ing, tracing, and blue-printing. Associate Professor Hood.

III (= 3).—DESCRIPTIVE GEOMETRY. Three hours credit. Principles of projection. Execution of a large number of original exercises. Associate Professor Hood.

IV (= 4).—ENGINEERING DRAWING. Two hours credit. Machine drawing, sketching of machine parts and preparation of working drawings; detailing of machines from sketches, notes, assembly drawings, and assembled machines; tracing and blue-printing. Each student prepares complete drawings for some simple machine. Associate Professor Hood.

MACHINE CONSTRUCTION.

I (= 1).—FOUNDRY PRACTICE. One hour credit. Molding, and management of the cupola furnace and brass furnace. Practice in melting and pouring iron and nonferrous alloys. Each squad of students is required to have entire charge of the melting and casting of a heat of iron at least once during the course. Mr. Rocklund.

II (= 2).—PATTERN MAKING. One hour credit. The principles of pattern making are studied in a practical way by having each student make patterns that are actually used in the foundry. Assistant Professor F. E. Jones.

III (= 3).—FORGING. One-hour credit. Complete course, including stock calculations, bending, drawing, welding, tempering and hardening. Mr. Wiltfong.

V (= 5).—BENCH WORK. One hour credit. A machine-shop course in the use and care of tools; practice in filing, chipping, drilling and riveting. Mr. White.

VI (= 6).—MACHINE TOOL WORK I. One hour credit. Principally lathe work. Includes cutting off stock, centering, straight and taper turning and thread cutting; turning steel, wrought iron, cast iron, and brass. Mr. White.

VII.—MANUAL ARTS. No credit. A practice course for teachers. Care and use of hand tools; problems in constructive joinery; simple cabinet making and furniture work. The lathe and lathe tools; exercises in turning between centers, face plate and chuck turning. Finishing, staining, dyeing, waxing, and polishing. Assistant Professor F. E. Jones.

VIII.—MANUAL ARTS. No credit. For principals and supervisors. A study of shop plans and the equipment necessary for different sized classes. The economics of manual training, cost of equipping and maintaining the school shop. A study of courses suitable for the shop classroom, involving the fundamental tool processes and the use of the various hand tools. The selection of suitable woods, the effects of sawing, seasoning, shrinking, and warping. Assistant Professor F. E. Jones.

ARCHITECTURAL ENGINEERING.

I (= 5).—HISTORY OF ARCHITECTURE I. Three hours credit. An analytical study of architectural development of the historic styles, explaining the underlying principles of construction and design, influence of materials, and effects of religious and political conditions. Will include the architecture of Egypt, Assyria, Persia, Greece, and Rome. Illustrated lectures, reading and sketching. Professor Goldsmith.

II (= 7).—ARCHITECTURAL DRAWING I. Three hours credit. Pencil drawing from casts of architectural ornament and historic details, designed to prepare the student for the free use of sketching in architectural composition and design. Professor Goldsmith.

III (= 8).—ARCHITECTURAL DRAWING II. Continuation of course I. Pen, pencil, and brush work. Three hours credit. Professor Goldsmith.

There will also be offered all of the courses of Architectural Design. See description in the catalog of the School of Engineering.

CIVIL ENGINEERING.

I (= 1).—SURVEYING. Three hours credit. Use, care, and adjustment of surveying instruments. Methods involved in land, city, topographic, and hydrographic surveying. Field practice in the use of tape, level, and transit. Assistant Professor J. O. Jones.

MECHANICS.

I (= 50).—MECHANICS. Five hours credit. A study of the laws of statics and dynamics. Action of forces upon bodies, and the resulting motions. Prerequisite, Calculus I. Assistant Professor Brown.

II (= 51).—STRENGTH OF MATERIALS. Four hours credit. The theory of resistance to stress and application to engineering construction. Prerequisite, Mechanics 50. Assistant Professor Brown.

III (= 52).—TESTING OF MATERIALS. One hour credit. A laboratory course to accompany course 51. The testing of iron, steel, wood, and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Assistant Professor Brown.

IV (= 55).—HYDRAULICS. Three hours credit. A study of the laws governing the pressure and flow of liquids. Calculation of the flow through pipes and over weirs. The principles and types of pumping and hydraulic power machinery. Prerequisite, Mechanics 50. Assistant Professor J. O. Jones.

V (= 56).—HYDRAULIC LABORATORY. One hour credit. A course to accompany course 55. Experimental work with the flow of water over weirs and through orifices and pipes, and in testing hydraulic machinery. Assistant Professor J. O. Jones.

ELECTRICAL ENGINEERING.

I (= 50).—DYNAMO MACHINERY. Three hours credit. Theory of direct-current generators and motors. Prerequisite, Physics 1E and 2E. Associate Professor Johnson.

II (= 54).—ELECTRICAL LABORATORY. Three hours credit. An experimental course for the purpose of illustrating the principles of direct-current dynamo machinery and acquainting the student with the types and performance of direct-current apparatus. Must be preceded or accompanied by course 50. Associate Professor Johnson.

III (= 60).—ELEMENTS OF ELECTRICAL ENGINEERING. Three hours credit. A course covering the general field of electrical engineering and prepared especially for civil engineering students. Associate Professor Johnson.

IV (= 64).—ELECTRICAL ENGINEERING FOR ARCHITECTS. Three hours credit. A course covering electrical installation for buildings. For students in architectural engineering. Associate Professor Johnson.

MECHANICAL ENGINEERING.

I (= 1).—MACHINE DRAFTING. One or two hours credit. Making of working drawings from sketches of assembled parts, followed by an assembly drawing from detailed working drawings. Assistant Professor Garver.

II (= 4).—STEAM MACHINERY. Two hours credit. (a) Fuels, combustion, and steam generation. (b) A study of boiler and engine types. Assistant Professor Garver.

III (= 5).—ENGINES AND BOILERS. Three hours credit. A brief study of the general problem of steam power generation from the standpoint of the installing engineer. Physics 1E is a prerequisite. Assistant Professor Garver.

IV (= 6).—STEAM ENGINEERING. Three hours credit. Elements of steam machinery, with special reference to combustion of fuels, boiler types, and engine mechanism, including the study of valve gears. Laboratory practice in proximate analysis of coal, and flue-gas analysis. Chemistry 2 is a prerequisite. Assistant Professor Garver.

ENGLISH.

I (nearly = 77).—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Poetry. Two hours credit in the College or in the Graduate School. 9 to 10. The authors studied will be, Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Required library readings, with the preparation of a thesis. Professor Dunlap.

II (= 78).—SHAKSPERE. Three hours credit in the College or in the Graduate School. 10:30 to 12. Study and interpretation of two plays of Shakspeare, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Required library readings, with the preparation of a thesis. Professor Dunlap.

III (= Education 86).—METHODS OF TEACHING ENGLISH. Three hours credit in the School of Education or in the Graduate School. 7:30 to 9. Review of the principles of teaching English composition, English language and grammar, and English literature; lectures, reference reading, and conferences. Professor Hopkins.

IV (= 55).—LITERARY CRITICISM. Two hours credit in the College or in the Graduate School. 9 to 10. Study of the principles and methods of criticism through its literature, with practice in book-reviewing and in critical writing. Professor Hopkins.

V (= 50).—NARRATION AND DESCRIPTION. Three hours credit in the College. 10:30 to 12. Lectures, themes, and conferences. A study of the general principles of literary narration, including the short story, and literary description. Assistant Professor Gardner.

VI (= 2).—RHETORIC AND COMPOSITION. Two hours credit in the College. 9 to 10. A fundamental course. Lectures, themes, conferences, and assigned readings. The forms studied will be, first, description, and then the simpler forms of narration; but throughout, the primary purpose will be the cultivation of the student's ability to use the English language with facility and correctness, in the sustained and consecutive presentation of material. Assistant Professor Gardner.

Second Term, July 20 to August 16.

VII (= 81).—BROWNING AND TENNYSON. Two hours credit in the College or in the Graduate School. 7:30 to 9. Interpretative study of selected poems and general view of work of both authors, with comparison of their relation to nineteenth century literature. Associate Professor Lynn.

VIII (= 73).—ENGLISH LITERATURE OF THE FIRST PART OF THE EIGHTEENTH CENTURY, covering the years from 1662 to 1735. Two hours credit in the College or in the Graduate School. 9 to 10:30. A view of the period in relation to the history of English literature, and examination of the principal authors of the time. Associate Professor Lynn.

Graduate Work. For the benefit of students who are candidates for the master's degree, the Department of English announces the following courses as probable, so that intending students may plan their work ahead:

For 1917: Methods of Teaching English; English Novel; Shakspeare; English Drama; Modern English Lyric; Old English.

For 1918: Methods of Teaching English; American Literature; Nineteenth Century Prose; Shakspeare; English Drama; English Essay; Middle English.

ENTOMOLOGY.

First Term, June 8 to July 19.

The purpose of the Department in offering courses in the Summer Session is to enable students to take advantage of the opportunity for biologic study of insect life not possible at other times of the year. The Department, therefore, does not repeat in the summer the regular winter courses, but offers courses devoted largely to experimental study of living forms. The work is conducted, in part, as an outdoor study.

I (= 1).—INTRODUCTORY ENTOMOLOGY. Five hours credit in the College. 8 to 12. This course is a general introduction to the life of

the insect world. Its aim is to lead the student into a fuller appreciation of nature by a study of the varied and interesting life histories of insects. This course is a combination of lecture and laboratory work, in which an abundance of illustrative material will be used. Professor Hunter.

II.—FIELD ENTOMOLOGY. Three to six hours credit in the College. A minimum of fifteen to thirty hours a week, part of which will be 10:30 to 12, the others by arrangement. This course is of equal rank with courses 1 and 3 of the College, a taxonomic and biologic study of the insect fauna of this region. This course involves much experimental work. Field studies are for the purpose of amplifying observations made in the laboratory. Excursions to localities near by where insect life of special interest occurs. Professor Hunter.

III.—BIOLOGICAL SURVEY. Six hours credit in the College or in the Graduate School. The Department of Entomology has already completed a survey of insect life in fifty-one counties of the state. This work will be resumed at the opening of the Summer Session and the party will remain in the camp until the first week in September. This course consists of a taxonomic study of all existing forms, extended investigations in their life histories, and relations to environments. This course will afford an opportunity to several properly prepared students or teachers in the state who are interested in these problems to join the expedition and continue their work. Arrangements may be made whereby these investigators may obtain representatives from the duplicate material taken to add to their own collections or those of the institutions with which they are connected. The head of the department invites correspondence from those desiring appointments on this survey. Professor Hunter.

IV.—ORCHARD AND FOREST INSECT LIFE. Six hours credit in the College or Graduate School. The head of the Department, as state entomologist, in connection with the State Entomological Commission, is conducting a comprehensive and detailed survey of the insect life as it pertains to the orchards and forestry of the state. In this work special attention is given to statistical methods and detailed illustrations of distribution by means of maps and charts. Arrangements have been made whereby a very limited number of well-prepared students may receive appointments for credit on this work. Professor Hunter.

V.—RESEARCH. The privileges of the laboratory and library will again be afforded graduate students to carry on special lines of investigation. Students contemplating the acceptance of this offer will do well to arrange with the head of the Department in advance, either in person or by correspondence. Candidates for the master's degree who are availing themselves of the three Summer Sessions' credit will be given the course in biology in this session. This will consist of an intensive biologic study of a Kansas group. Qualified students will be given an opportunity to undertake a monograph of the group studied.

Second Term, July 20 to August 16.

VI.—GENERAL ECONOMIC ENTOMOLOGY. Four hours credit in the College. 8 to 12. This is a study of the life history and the present knowledge of the most important of our injurious insects, of the methods to be used in dealing with them, of the sources of economic literature, and of the methods commonly used in the investigations of problems in economic entomology. Class work will consist of lectures, text, recitations, and special reference readings. The field study consists of field trips, in the course of which the student gains a first-hand acquaintance with the more important injurious insects. The laboratory work consists of the formation and study of a collection of injurious insects. Professor Dean.

VII.—BIOLOGICAL SURVEY (*continued*). Four hours credit in the College or in the Graduate School.

VIII.—ORCHARD AND FOREST INSECT LIFE (*continued*). Four hours credit in the College or in the Graduate School.

GEOLOGY.

First Term, June 8 to July 19.

I (= three-fifths of 1).—ELEMENTARY GEOLOGY. Three hours credit in the College. 7:30 to 9. This course includes a thorough study of fundamentals. Stress is placed upon all the important dynamic principles. The work will include natures of erosion, the production of the principal geologic and physiographic features of the earth, mountain making, and the relations of the earth to other planetary bodies. It will also include a large amount of laboratory work in the detailed study of the more common rocks and minerals. Professor Haworth.

II (= 56).—PHYSIOGRAPHY. Three hours credit in the College. 9 to 10:30. This course in physiography is prepared especially for those fitting themselves to teach physical geography in secondary schools. It includes a thorough study of nature's methods in bringing about the present conditions of the earth's surface features, with details of all the more important dynamic processes, and also a study of necessary conditions for the production and maintenance of the higher forms of animal and plant life, and their distribution on the face of the earth. Considerable time will be devoted to a study of climate and climatic conditions and natural causes which produce them, and their effect upon the animal and vegetable kingdoms, with special reference to the suitability of the earth's climatic conditions for the habitation of man. Professor Haworth.

III (=50).—HISTORICAL GEOLOGY. Three hours credit in the College. 10:30 to 12. This is a continuation of course 1, with special reference to earth history, continental development, stratigraphy of land areas, history of plant and animal life, and the use of fossils in the identification and correlation of stratified rocks. Prerequisite, course 1. Professor Haworth.

GERMAN.

First Term, June 8 to July 19.

Ia (= three-fifths of 1).—BEGINNING GERMAN. Three hours credit in the College, School of Fine Arts, or School of Engineering. 7:30 to 9. Combined with course Ib it may be used as an entrance unit. This course, which will cover the essentials of the grammar, will be taught by the laboratory method. By this method the emphasis is laid upon the acquirement of a large and practical vocabulary by the use of illustrative charts and the application of language psychology. Correct pronunciation is based upon simple, practical phonetics, and the recitations are conducted as far as possible in German. Original composition, conversation and the development of a feeling for the language begin with the first lesson. A thorough drill in grammar, which is learned inductively, accompanies the practical use of the language. Professor Engel.

Ila (= three-fifths of 2).—GERMAN READER, *completed*. Three hours credit in the College, School of Fine Arts, or School of Engineering. Combined with course IIb it may be used as an entrance unit. 7:30 to 9. Special exercises in word order and auxiliary verbs, and sight-reading. Must be preceded by German 1. Students who make grade I in this course will be allowed to enter German 3 in the regular session, or in a succeeding Summer Session, if it should be offered, without taking course IIb. But if an entrance unit is wanted, both Ila and IIb must be taken. Associate Professor Corbin.

IIIa (= two-fifths of 3).—GERMAN PROSE. Two hours credit in the College, School of Fine Arts, or School of Engineering. Combined with course IIIb it may be used as an entrance unit. 9 to 10. Reading, accompanied by drill in the more difficult features of grammar. Associate Professor Kruse.

IV (= Education 85).—TEACHER'S COURSE IN GERMAN. Three hours credit in the School of Education. 10:30 to 12. The work of this course will consist of a review of special topics in grammar and syntax and composition, with practical illustrative exercises, of some study and drill in elementary practical phonetics, and of a comparison and discussion of different methods in teaching beginning German. A limited number of properly qualified students in this course will be given an opportunity to get credit for practice teaching, two hours, by attending and assisting in the work of course I, and thus satisfy the requirements of the department for the teacher's diploma. Professor Engel.

V.—GOETHE'S PROSE WRITINGS, OR LYRICS AND BALLADS. Three hours credit in the College or in the Graduate School. 9 to 10:30. Lectures and supplementary readings on the life of Goethe. Reading of selected prose works or poems in class and reports on assigned reading outside of class. Associate Professor Corbin.

VI (= 58 or 158).—THE GERMAN ROMANTIC DRAMA. Three hours credit in the College or in the Graduate School. 7:30 to 9. The work of this course will consist of a brief consideration of the literary ideals of the Romantic School followed by a more intensive study of the drama of the chief representatives of the School. Special attention will be paid to the dramas of Heinrich von Kleist and Grillparzer. Associate Professor Kruse.

Second Term, July 20 to August 16.

Ib (= two-fifths of 1).—BEGINNING GERMAN, *completed*. Two hours credit. 7:30 to 9. Carruth's Reader. Assistant Professor Briggs.

IIb and IIIb (= two-fifths of 2 or 3).—Two hours credit to complete either 2 or 3. 9 to 10:30. This course may be taken by students who have completed IIIa and by those who have completed IIa with grade I. Assistant Professor Briggs.

HISTORY AND POLITICAL SCIENCE.

First Term, June 8 to July 19.

I (= 1).—MEDIÆVAL HISTORY I. Three hours credit in the College. 7:30 to 9. A history of Europe from the barbarian invasions to the crusades. Lectures, collateral reading and reports. Associate Professor Patterson.

II (= 55).—THE PROTESTANT REVOLT. Two hours credit in the College or Graduate School. 9 to 10. After a review of the social, economic and intellectual antecedents of the movement in Germany, the career of Luther and the progress of the revolt to the Peace of Augsburg will be traced. Associate Professor Patterson.

III.—CONTEMPORARY AMERICAN HISTORY, 1877-1912. Two hours credit in the College or in the Graduate School. 9 to 10. Lectures, reports and assigned readings, designed to present systematically the progress of national politics as reflected in national legislation and judicial decision; in the national issues concerning the tariff, currency, imperialism, the trusts, equal suffrage and prohibition; and in the development of capitalism and labor unions within the United States. Associate Professor Davis.

IV (= three-fifths of 10).—AMERICAN GOVERNMENT. Three hours credit in the College. 9 to 10:30. A general survey of the field of American government and politics with emphasis upon present problems

and tendencies. Special attention will be paid to such problems as presidential leadership, the speakership, the position of the senate, the "pork barrel" and the budget, the regulation of railroads and industrial corporations, the judiciary and its critics, the modern state governor, the legislature and direct legislation. Associate Professor Dykstra.

V (= 85).—DIPLOMACY, 1879-1916. Three hours credit in the College or in the Graduate School. 7:30 to 9. Lectures, reports, and assigned readings, designed to analyze the controlling influences in international relations, the general principles of diplomatic procedure, the origin and meaning of the balance of power in Europe, the recent diplomatic history of the powers in Asia, Africa and America, and diplomacy of the present European War. Associate Professor Davis.

VI (= 86).—POLITICAL PARTIES. Two hours credit in the College or in the Graduate School. 11 to 12. The place of parties in democratic governments, character of American parties, nominating and election processes, permanent party machinery, abuses of party organization, attempts to subject parties to popular control, civil service reform, ballot reform, direct primaries and corrupt-practices acts. Associate Professor Dykstra.

Second Term, July 20 to August 16.

VII (= two-fifths of 3).—EARLY ENGLAND. Two hours credit in the College. 7:30 to 9. The political, economic and social history of England from the beginning down to 1485. Associate Professor Crawford.

VIII (= 56).—ENGLISH INSTITUTIONS I. Two hours credit in the College or in the Graduate School. 9 to 10:30. Treats of the Anglo-Saxon government, the foundation of parliament, the central and the local government, the judiciary, feudalism, the manorial system and the guilds. Associate Professor Crawford.

HOME ECONOMICS.

First Term, June 8 to July 19.

I (= 80).—THE RELATION OF THE HOME TO THE COMMUNITY. Three hours credit in the College. 9 to 10:30. A course designed to give the student a view of the broader aspects of home economics as it is related to the welfare of the community. Special emphasis will be laid on the state and federal laws which are most directly related to the home. Because of its broad and general nature, it is adapted not only to home economics students but to those specializing in other fields. Miss Downey.

II (nearly = 51).—FOOD AND NUTRITION. Three hours credit in the College. 7:30 to 9. A course without prerequisites, open to all students. It includes a general survey of the principles of diet, food habits and dietary standards, the relation of food to health. This course presents in a simpler and less specialized way the more elementary problems connected with food and digestion. To fulfill the requirement in dietetics for students majoring in home economics, this course must be supplemented by a special three-hour course with the usual prerequisites. Miss Downey.

III (= 2).—HOUSEHOLD DESIGN I. Two hours credit in the College. Two hours laboratory and discussion daily. 9 to 10 and one hour daily by appointment. This course deals with the general principles of color and design, with laboratory work in certain problems in home decoration; the use of color in rooms; designs and materials in rugs, draperies and wall papers; furniture and other household articles. Prerequisite, a knowledge of drawing. Miss Gwinn.

IV (nearly = 72).—HOUSEHOLD DESIGN II. Two hours credit in the College. Two hours laboratory and discussion daily. 10 to 11 and one hour daily by appointment. A study of the history of costume with

emphasis upon the factors influencing its design. Applications of the principles of design and color to dress adapted to the environment and the individual. Prerequisite, a knowledge of drawing; design advised. Miss Gwinn.

V (= 0).—PLAIN SEWING AND GARMENT MAKING. No credit. Three hours laboratory work daily. 7:30 to 9 and one and one-half hours daily by appointment. Principles and practice in hand and machine sewing, drafting and the making of simple garments. This course is offered because the majority of students have not had the opportunity of taking it in the high school. It is prerequisite to course 72. Miss Gwinn.

VI (= 52).—SPECIAL PROBLEMS IN FOOD PREPARATION. Three hours credit in the College or in the Graduate School. 9:30 to 12. A critical study of common theories and practice in food preparation, with experimental investigation of special problems. The purpose of this course is to place food preparation on a scientific basis and to systematize methods of work. Of special interest to teachers of home economics who desire to equip themselves for advanced work in home economics. Prerequisites, food preparation, selection and economic uses of foods, or equivalents; and elementary chemistry. Professor Sprague.

VII (= Education 83).—TEACHERS' COURSE IN HOME ECONOMICS. Three hours credit in the School of Education or in the Graduate School. 7:30 to 9. A study of the history of the home economics movement, showing the reason for the diverse standards and aims to be found in the work in different schools. A study of the needs of different classes of schools, with a discussion of the kind of work appropriate to each. Especial emphasis will be put on the high-school problem, the ground that should be covered, and methods of presentation, the planning of equipment, of courses, and of typical lessons. Professor Sprague.

JOURNALISM.

First Term, June 8 to July 19.

I (= 1).—NEWSPAPER WRITING. Three hours credit in the College. 9 to 10:30. A study of the methods and materials of newspaper writing, the news story, the human-interest and feature stories. The class will gather campus news, and write and edit copy for the *Summer Session Kansan*, a paper to be published twice a week by students in the journalism classes. The course is designed, first, to equip students with the primary principles of newspaper making, and second, to fit them to become correspondents for state dailies and metropolitan papers. Associate Professor Flint.

II (= 53).—INTERPRETATION OF THE NEWS. Two hours credit in the College. 8 to 9. A study of the work of editorial executives, with practice in preparing assignments, reading copy, and writing heads for the *Summer Session Kansan*. The forms of editorial writing are studied for effectiveness in winning the reader's belief, sympathy, and support. Practice is afforded in the use of controversial weapons, such as sarcasm, irony, and satire, and in handling such auxiliary editorial matter as newspaper verse and cartoons. Current events, as material for interpretation, receive special attention. Ethical problems involved in newspaper publishing will be considered. Associate Professor Flint.

NOTE.—For the benefit of high-school English teachers who have to deal with the problems of the high-school paper, weekly discussions will be held on Friday covering the methods of developing and utilizing the newspaper in the school—its value as an outlet for student production and as an interpreter of the school to the public.

LATIN.

First Term, June 8 to July 19.

I (= 13 or 50).—LATIN COMPOSITION. Two hours credit; as 13 in the College; as 50 in the College or the Graduate School. 11 to 12. A set of exercises will be used which has not been used previously in course 13. Those who wish credit for course 50 will be given additional exercises of somewhat greater difficulty. The work will be adapted as far as possible to the needs of teachers by selecting exercises which illustrate some of the more troublesome grammatical principles. In lieu of some prepared exercises, extra periods may be taken for practice in translating Latin at hearing and in the rapid writing of Latin. Open to all undergraduates who have had the course in De Senectute, and to all teachers of Latin. Professor Walker.

II (= Education 87).—TEACHERS' COURSE IN LATIN. Two hours credit in the School of Education or in the Graduate School. 9 to 10. A discussion of the proper aims of Latin study, of the methods by which these aims may be attained, of textbooks, and of illustrative material; such practice as may be needed in the accurate reading of Latin prose and verse; followed by either a review of those principles of sound-change which are most helpful in understanding the inflections, or such study of small portions of the preparatory authors as will guide the teacher in the use of illustrative material and supplementary reading. Professor Walker.

III (= part of 106).—THE SYNTAX OF LATIN CASES. Two or four hours credit in the Graduate School. 10 to 11. This course is a part of the seminar in syntax. It deals with the origin, history, and relationships of some case-constructions. It presupposes a good knowledge of the material in the grammars and an interest in syntactical investigation. Professor Walker.

Second Term, July 20 to August 16.

IV (nearly = 60).—CÆSAR'S GALLIC CAMPAIGNS. Two hours credit in the College or the Graduate School. 9 to 10:30. This course deals with the historical, geographical, and military questions involved in the study of Cæsar's Gallic War. It is planned for the double purpose of giving teachers a clear and detailed view of the operations covered by the first four books, and acquainting them with the work done on Cæsar by the great editors and commentators. This is an advanced course and can not be taken as a preparatory subject. Professor Walker.

V.—THE SYNTAX OF THE LATIN VERB. Two hours credit in the College or in the Graduate School. 10:30 to 12. A study of the uses of tenses and moods, emphasizing the origin and relationships of the constructions. It consists of lectures, comparison of the leading grammars, and discussions of groups of examples found in the preparatory authors. This course is meant to be a practical course for teachers, not a part of the seminar in syntax. Properly prepared graduate students, however, may enroll for four hours and make seminar work of it. Professor Walker.

LAW.

First term, June 8 to July 19.

The courses in law in the Summer Session are designed to assist those who do not have the requisite credits in law to entitle them to enroll regularly in either the Middle or Senior classes of the School of Law, or who desire to shorten the actual time required to complete the three-year course of study. A course has been arranged which will enable a person who enrolls in the Summer Session to graduate after attending three Summer and two regular sessions of the University, providing he has

previously completed the preparatory work required for entrance to the Law School, as laid down in the General Catalog.

Note that those who wish to take advantage of this arrangement should begin their University residence in the summer, not in the fall.

Any two of the following courses may be taken by the student upon satisfying the instructor of his preparation to undertake the work. It is intended, however, that those who wish to complete the course in the School of Law in three summer and two regular sessions shall study criminal law and torts in the first Summer Session, agency and insurance in the second Summer Session, and partnership and wills in the third Summer Session. During the regular sessions the student will pursue the course of study in the order stated in the General Catalog of the University for students enrolled in the Summer Session course.

I.—CRIMINAL LAW. 9 to 10:30. A general survey of the substantive law of crimes, both common-law and statutory. Professor Burdick.

II.—TORTS. 7:30 to 9. A study of conversion, negligence, duties of landowners, hazardous occupations, deceit, defamation, etc. Professor Green.

III.—AGENCY. 9 to 10:30. Who is a competent principal and who is a competent agent, formation of the relation, authority, rights, duties and liabilities of the several parties, principal, agent, and third party, and various classes of agents. Professor Green.

IV.—INSURANCE. 7:30 to 9. The theory of insurance with reference to fire, marine, accident, and life risks; the legal relation of the parties to the insurance contract examined historically and critically, with a view to developing the fundamental principles of the contract and the law merchant underlying it; interpretation and construction of the standard policies. Open only to students who have had Contracts. Professor Humble.

V.—WILLS. 7:30 to 9. Testamentary power, form and classification of wills; testamentary writings; character of property which may be devised; capacity of beneficiaries to take; undue influence; execution and attestation; revocation; lapsation; death, survivorship and substitution of beneficiaries; abatement of legacies. Professor Burdick.

VI.—PARTNERSHIP. 9 to 10:30. Formation of a partnership; partnership as to third person; nature of a partnership; power of partners; rights and remedies of creditors; duties and liabilities of partners; dissolution of partnership; accounting and distribution; limited partnerships. Professor Humble.

MATHEMATICS.

First Term, June 8 to July 19.

I (= 1).—SOLID GEOMETRY. Two hours credit in the College, required for entrance to the School of Engineering. 10 to 11. The usual theorems and constructions of standard textbooks with special attention to original demonstrations and use of models. Mr. Wheeler.

II (= 2).—COLLEGE ALGEBRA. Three hours credit in the College. 7:30 to 9. Review of exponents, radicals, and quadratic equations; progressions; logarithms; determinants; theory of equations. This course is especially recommended to the teachers of mathematics in the grammar schools and high schools of the state who wish to review the subject of algebra. Mr. Wheeler.

III (= 3).—PLANE TRIGONOMETRY. Two hours credit in the College. 9 to 10. The six trigonometric functions; principal formulas of plane trigonometry; solution of triangles and practical problems. Assistant Professor Stouffer.

IV (= 4).—ANALYTICAL GEOMETRY I. Two hours credit in the College. 8 to 9. Analytical geometry of the point, line and circle; tran-

scendental curves and their equations; polar coördinates; transformation of coördinates. Professor Van der Vries.

V (= 5).—CALCULUS I. Three hours credit in the College. 9 to 10:30. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates; series. Open to undergraduates who have completed or are taking course IV. Professor Ashton.

VI (= 52).—ADVANCED CALCULUS I. Three hours credit in the College or in the Graduate School. 9 to 10:30. Critical review of the fundamental notions of calculus; expansion in series; definite integrals; multiple integrals; line integrals; applications to geometry and physics. Prerequisites, courses 2 to 7. Professor Van der Vries.

VII (= 57).—COMPLEX NUMBERS. Two hours credit in the College or in the Graduate School. 8 to 9. Analytic and geometric properties of complex numbers; conditions of functionality; integration; circular transformations; applications. Prerequisite, course 55. Professor Ashton.

Second Term, July 20 to August 16.

VIII (nearly = 62).—HISTORY OF ELEMENTARY MATHEMATICS. Two hours credit in the College or in the Graduate School. 7:30 to 9. A study of the historical development of arithmetic, elementary algebra and geometry. Associate Professor Mitchell.

IX (nearly = Ed. 89).—TEACHERS' COURSE IN MATHEMATICS. Two hours credit in the School of Education or in the Graduate School. 9 to 10:30. A course designed for teachers and for students preparing to become teachers of mathematics. Associate Professor Mitchell.

MUSIC.

The Summer Session work in music will be under the direction of Associate Dean Preyer. The Department offers courses in piano under Associate Dean Preyer, Assistant Professor Greissinger, Assistant Professor Sweeney, Miss Miller, and Miss Emley; in voice under Professor Downing and Miss Reynolds; in organ under Miss Emley; in public-school music under Professor Downing, and in theory under Associate Dean Preyer.

PIANO. The courses in piano are intended for three classes of students: for teachers who wish to improve their own playing, add to their repertoire, and increase their knowledge of teaching methods; for students who wish to complete their preparation for the Fine Arts School, or for some particular year therein; especially for high-school students who are too busy to give much time to music during the year; and for those who study music as a source of general culture and to gratify personal tastes.

VOICE. The course in voice is valuable for all who are interested in the art of singing, who wish to form correct habits of breathing and breath control, tone production, methods of teaching, etc.

This course furnishes opportunity for those who desire to enlarge their repertoire during the summer months. Special attention is given to beginning students.

ORGAN. The course in organ offers training to meet the practical demands of church work. The course includes special studies in registration, sight reading, hymn playing, accompanying, suites, and modern pieces by modern composers.

The School is provided with a three-manual pipe organ. Use is also made of organs in local churches.

THEORY. Courses in harmony are offered. Students who enter the Freshman class in February often finish the year's work in the Summer

Session and continue with the Sophomore class in the fall. There is also a beginning class. Classes meet three hours a week.

MUSIC SUPERVISORS' COURSE. This course is for those who are preparing for public-school music supervision. This course is also open to the professional music supervisor who wishes to take graduate work, or to review the work for some special reason. There is a growing demand for teachers of public-school music who are competent to present the subject in a psychological manner. The course covers the work from the kindergarten to the high school, inclusive. The following are some of the subjects dealt with: Rote song, rhythm, ear training, sight singing, interval practice, care of the child voice in singing, chorus conducting, etc.

A complete, printed monthly outline of all the work to be accomplished and how to present it in each grade will be furnished for \$1.

The Summer Session in this course is equivalent to one semester's work in the regular course of public-school music supervision.

The fee for this course is \$15.

EAR TRAINING AND DICTATION.—SIGHT SINGING. These two courses are of great importance to all music students, and of special importance to all public-school music teachers. The fee for these two courses is \$10. If the two are taken with the Music Supervisors' Course the fee for the three is \$20.

MUSIC FOR TEACHERS IN THE GRADES AND HIGH SCHOOL. This course is especially for the benefit of grade teachers and high-school teachers who wish to add to their knowledge of music and to better prepare for the teaching of music in the schools. The fee for this course is \$10.

GENERAL PSYCHOLOGY. The College offers a three-hour course in general psychology, which is demanded of all candidates for a certificate in public-school music. Students wishing to take the course may do so after consultation with Professor Downing.

FEES AND EXPENSES.

Private lessons with Associate Dean Preyer:

| | |
|---|---------|
| One half-hour lesson a week | \$15.00 |
| Two half-hour lessons a week | 25.00 |
| Theory—twice a week in classes of three | 15.00 |

Private lessons with Professor Downing:

| | |
|------------------------------------|---------|
| One half-hour lesson a week | \$15.00 |
| Two half-hour lessons a week | 25.00 |

Private lessons with Miss Greissing, Miss Sweeney, Miss Miller, or Miss Emley:

| | |
|------------------------------------|--------|
| One half-hour lesson a week | \$6.00 |
| Two half-hour lessons a week | 12.00 |

Private organ lessons with Miss Emley:

| | |
|--|--------|
| One forty-five minute lesson a week | \$9.00 |
| Two forty-five minute lessons a week | 18.00 |

Organ practice at local churches, \$2.00 to \$3.00 a month for one hour daily.

Pianos may be rented at private houses or at the music dealers.

PHILOSOPHY AND PSYCHOLOGY.

First Term, June 8 to July 19.

I (= 1a).—**GENERAL PSYCHOLOGY.** Three hours credit in the College. 9 to 10:30. A general study of human consciousness and behavior, with reference both to scientific theory and to practical application. Required for admission to the School of Education. Open to students who have taken psychology in high school, as well as to those who have not. Should

be preceded by elementary courses in the biological and physical sciences. Professor Ogden.

II (= 1b).—GENERAL PSYCHOLOGY LABORATORY. Two hours credit in the College. 10:30 to 12:30. Experiments, assigned readings, and reports. Supplementary to I, and should be accompanied or preceded by it. Professor Ogden.

III (= 3).—ELEMENTARY LOGIC. Three hours credit in the College. 10:30 to 12. Textbook course for beginners, presenting the elementary principles of deduction, induction, and circumstantial evidence. Professor Hollands.

IV (nearly = 71).—HISTORY OF MODERN PHILOSOPHY. Three hours credit in the College or in the Graduate School. 9 to 10:30. The development of philosophy in its relations to general culture, scientific theory, education, politics, and religion, as well as in its more strictly metaphysical aspects, from the Renaissance to the present. Lectures, assigned readings, and occasional essays. This course has no prerequisites in the department, but is a natural sequel to the sophomore courses. Large portions of the course are related to the work in history, mathematics, and the natural sciences, and the student will find courses in any or all of these useful as preparation. Professor Hollands.

Second Term, July 20 to August 16.

V (= 4).—INTRODUCTION TO PHILOSOPHY. Two hours credit in the College. 9 to 10:30. Textbook course for beginners, presenting the general nature of philosophical problems and of the relation of philosophy to science, religion, and art. Should be preceded by elementary courses in the biological and physical sciences. Professor Templin.

VI (= 81).—PRACTICAL ETHICS. Two hours credit in the College or in the Graduate School. 10:30 to 12. The application of theoretical principles of conduct to practical problems of life. Professor Templin.

PHYSICAL EDUCATION.

First Term, June 8 to July 19.

The demand for high-school teachers who are prepared to take care of the recreational needs of the high-school students is growing stronger each year. Teachers who are equipped to assume this responsibility, in addition to being able to render a much-needed service, can usually secure positions carrying higher salaries than the same teachers can secure without such equipment.

Though the courses in this department are complete in themselves they are to be considered as presenting separate phases of the subject of physical education. It is the plan of the department to offer other courses as rapidly as it becomes possible to do so, probably requiring eventually attendance at three Summer Sessions to complete all of the work to be offered. Students interested in any phase of the subject, however, will be able to take the courses applying to it, without necessarily taking others offered in connection with it.

Courses corresponding to "laboratory work," and illustrating and applying the principles, are given in connection with the theoretical courses in these departments. They are conducted in the gymnasium, or out of doors on the specially prepared fields. Credit is not given for any practice work, but credit in the theoretical courses can not be secured until the student has completed the required amount of practice.

The courses to be offered during the summer of 1916 are as follows:

I (= 57).—PRINCIPLES OF RECREATIVE SPORTS. One hour credit in the College. 11:00 to 12:00. The psychology of play, the classification of games, analysis of athletic sports and group or team games, methods

of directing, coaching and officiating, planning outdoor gymnasiums, playgrounds and athletic fields for mass work. Professor Naismith.

II (= 56).—PRINCIPLES OF PHYSICAL EDUCATION. 1:30. One hour credit in the College. Intended for teachers who wish to conduct classes in gymnasium work.

A.—*For men.* Gymnastic nomenclature, analysis of exercises, invention of drills, synthetic methods of teaching gymnastics, planning work for different ages and classes, study of equipment and facilities. Professor Naismith.

B.—*For women.* Methods of teaching Swedish gymnastics, calisthenics and light apparatus work, marching tactics, gymnastics having esthetic value, and folk dances. Associate Professor Goetz.

III (= 55).—PRINCIPLES OF PHYSICAL EDUCATION. 11 to 12. One hour credit in the College. History of modern physical education; study of salient features of Swedish, German, and French methods, development of physical education in American institutions; methods employed in public schools, colleges and universities, in Y. M. and Y. W. C. A. gymnasiums, municipal playgrounds, institutions for the blind, etc. Associate Professor Goetz.

IV.—HYGIENE. No credit. 10 to 11. Intended chiefly for teachers who wish to introduce courses of this nature into high schools or the higher grades.

A.—*Personal Hygiene.* Care of the personal health, prophylaxis, immunity from contagious diseases.

B.—*Sex Hygiene.* What should be taught, when and how it may best be taught to high-school students. A study of the latest developments in this field.

C.—*First Aid to the Injured.* Special emphasis on the injuries common in the school and the home.

D.—*Signs of Illness.* Those signs which indicate that the student should be sent to the medical advisor, or the home physician. Professor Naismith.

VII.—SWIMMING. No credit. Those who wish instruction must register at the office for this course. The indoor pool will be lowered so that beginners may receive instruction without fear or difficulty. It will be reserved for women from 2:30 to 4:30 daily, and will be open for men at other times.

Potter Lake is equipped with facilities for diving and advanced swimming and will be open to both men and women. Competent guards will be on duty at specified hours. No one will be permitted to use the lake for bathing or swimming at hours when the guards are not on duty.

Courses illustrating and applying the principles of the theoretic courses, but open to any student of the Summer School, though not enrolled for the theoretic courses, are offered as follows:

VIII.—PLAYGROUND GAMES AND FOLK DANCES, continuing course I-B. 2:30 daily. Associate Professor Goetz.

IX.—MARCHING, MASS DRILLS, TUMBLING, AND APPARATUS WORK, continuing course II-A. 2:30 daily. Professor Naismith.

X.—CALISTHENICS, DRILLS, SWEDISH GYMNASTICS, continuing course II-B. 3:30 daily. Associate Professor Goetz.

XI.—TEAM OR GROUP GAMES, CLASS ATHLETICS, continuing course I-A. 3:30 daily. Professor Naismith.

XII.—SWIMMING. (Women.) Class instruction. 2:30-4:30.

XIII.—FOLK AND ESTHETIC DANCING. A.—For beginners (open to any student in the Summer School). B.—For advanced students. Associate Professor Goetz.

XIV.—DAILY RECREATION HOUR. 7:00 p. m. Held on the campus for all Summer School students. This gathering has a twofold purpose: First, for its social value, providing a means for getting the students together and making mutual acquaintances, while engaging in mild physical activity, thus fostering a spirit of friendliness and forgetfulness of self and studies. Music and all the necessary equipment will be provided. No change of clothing is necessary except that the student should wear low-heeled or tennis shoes. Second, to acquaint the teachers with the simple games which have been successful in recess and social occasions.

PROGRAM.

A.—*Games for Men and Boys Suitable for Small Grounds.* Simple games and sports will be introduced. Volley ball, long ball and other games will be played every evening. The students will be encouraged to organize into teams so that there may be competition and increased interest. Professor Naismith and the students in his classes will be in charge of these sports.

B.—*Games for Women and Girls.* Light, simple games, which may be played in ordinary clothing. This section will be in charge of Associate Professor Goetz and the students of her classes.

Folk dances for men and women students will follow the games, and may be participated in by all. A "Sing" may follow the recreation hour, in which all who desire may take part. Picnics and suppers may precede the recreation hour and will be planned weekly to promote sociability. On evenings when there is a program in the chapel the "hour" will be shortened. On rainy evenings the hour may be spent in the gymnasium.

PHYSICS.

First Term, June 8 to July 19.

I (= 5a).—GENERAL PHYSICS I. Mechanics, sound and light. Three hours credit in the College. 7:30 to 9. Lectures, recitations and problems. The demonstration periods are designed to give a general experimental development of mechanics, sound, and light. This phase of the course is supplemented by the corresponding laboratory course III (= 5b), which affords members of the class direct and first-hand acquaintance with experimental methods and with as many of the fundamental principles as time will permit. The recitation and problem periods serve to develop the theoretical portions of the subjects treated in the course. Prerequisite, elementary physics and some knowledge of trigonometry. Offered in alternate years. Associate Professor Rice.

II (= 6a).—GENERAL PHYSICS II. Heat and electricity. Three hours credit in the College. Lectures, recitations and problems. As in course I, the demonstration work develops these parts of the subject matter of physics from an experimental point of view, laying thereby the foundation for the theoretical development which is given in the recitation and problem periods. The laboratory course in heat and electricity, IV (= 6b), aids in the experimental part of these subjects. Prerequisites, elementary physics and some knowledge of trigonometry. Offered in alternate years. *Not offered in 1916.*

III (= 5b).—GENERAL PHYSICS LABORATORY I. Mechanics, sound, and light. Two hours credit in the College. 9 to 11 (may be arranged 9 to 10 or 10 to 11, the other hour by appointment). This course is coordinate with course I and supplements it from an experimental point of view. Course III must be preceded by or accompanied by course I or its equivalent. Associate Professor Rice.

IV (= 6b).—GENERAL PHYSICS LABORATORY II. Heat and electricity. Two hours credit in the College. 9 to 11 (may be arranged 9 to 10 or 10 to 11, the other hour by appointment). This course is coordinate with

course II and must be preceded by or accompanied by II or its equivalent. Associate Professor Rice.

V (= combination of 51 and 60).—LIGHT. This course may not be taken for credit by students who have had either of the two courses named. Lectures and problem work, at 7:30. Three hours credit in College or in the Graduate School. The course is planned for students who have had a course in general physics, and will deal with as wide a range of subjects in optics as the time will permit. Calculus will not be required. The work will be almost entirely in physical optics, dealing with wave motion, interference phenomena, the simpler theory of optical instruments, dispersion, polarization phenomena, and propagation of light in crystals, the Zeeman effect, ultra-violet and infra-red radiation, and the X-rays. The accompanying laboratory work, Physics VI, should be elected to make a five-hour course. Assistant Professor Smith.

VI (= 55).—LIGHT LABORATORY. Two to five hours credit in the College or in the Graduate School. By appointment. This course is intended to accompany course V, and is open only to students who are enrolled in the latter course, or who have had a course of like grade. Assistant Professor Smith.

VII (= 107).—RESEARCH AND THESIS. Three to six hours credit in the Graduate School. By appointment. Students who desire to carry on original investigations in physics will register in this course. For work of this character the department is provided with separate rooms equipped with gas and water and with electric circuits. A well-equipped shop is available for construction of special apparatus and an instrument maker will aid with the more difficult pieces. Associate Professor Rice and Assistant Professor Smith.

PHYSIOLOGY.

First Term, June 8 to July 19.

There has gradually developed within recent years a plea for better living conditions as a first step toward higher efficiency. Human vitality depends upon two primary conditions, heredity and hygiene. A knowledge of these laws should more and more be brought within the reach of all by various educational agencies. The individual must estimate properly the value of this knowledge in the application to daily life. This knowledge is best attained through a study and laboratory experiments of physiology, sanitary science, and the laws which make for health and the prevention of disease. To aid students and teachers of the state to share this widespread interest by fitting themselves more efficiently in the modern methods of teaching physiology, hygiene and sanitation, the following courses are offered in the Summer Session. They are the regular College courses, modified to meet the needs of teachers.

I (= 1).—ELEMENTARY PHYSIOLOGY. Five hours credit in the College. The course involves, (1) laboratory work; (2) a study of physiological topics as a foundation to hygiene of the schoolroom, home, person, and social life of children; (3) investigation of environment upon health and development; (4) discussions, recitations and lectures. Professor Hyde.

II (= 62).—PROBLEMS IN PHYSIOLOGY. Two, three or five hours credit in the College or in the Graduate School. Prerequisites, chemistry, physics, biology, physiology 3, or its equivalent. Professor Hyde.

PUBLIC SPEAKING.

First Term, June 8 to July 19.

I (= 1).—ORAL INTERPRETATION. Two hours credit in the College. 8 to 9. The purpose of this course is to enable the student to attain to some proficiency in the art of oral interpretation of literature. The problem set before the student will be, "To adapt the expression to the

thought." In view of this, a careful study of the thought of each selection must first be made. The object of this course will be accomplished by a thorough study of a carefully prepared list of selections with a view to the proper oral rendition of the same. In connection with the practice work upon the platform the student will be given such points of theory as are necessary in regard to the development and use of the voice and will be thoroughly instructed in platform deportment. Especial attention will be given to the preparation of high-school and other teachers for the handling of reading and oral interpretation in the public schools. Professor MacMurray.

II (= 50).—EXTEMPORE SPEAKING. Two hours credit in the College. 9 to 10. Speeches based on prepared outlines. Subjects will be either assigned by the instructor or chosen by the students themselves. Careful preparation of material is required; the plan of the speech is made in advance, but the choice of language is left for the moment of speaking. There is quite a demand for high-school teachers who can teach practical public speaking and "Oral English," and special attention will be given to the preparing of teachers for this kind of work. Professor MacMurray.

III (= 51).—EXTEMPORE SPEAKING II. Two hours credit in the College. 10 to 11. This course will be a continuation of course II; same methods are employed, but the work is of a more advanced nature. Lectures will be given by the instructor in connection with the class lessons, and attention will be given to the solution of special problems in public speaking. Prerequisite, course 50. Teachers who have already taken course 50 will find this course a great help in still more thoroughly preparing them for the teaching of public speaking in the public schools. Professor MacMurray.

ROMANCE LANGUAGES.

First Term, June 8 to July 19.

The Department of Romance Languages and Literatures takes pleasure in announcing that in the summer of 1916 courses will be offered by Professor A. G. Canfield, formerly head of the department and now professor of Romance Languages and Literatures in the University of Michigan.

As an evidence of the significance of a common language in establishing friendly international relations, the Carnegie Endowment for International Peace has appropriated funds for covering the cost of conducting additional courses in Spanish during both terms of the Summer Session. We are glad to announce these courses in connection with other courses in the Romance Languages Department.

FRENCH.

Ia (= three-fifths of 1; or, with additional work, of 51).—ELEMENTARY FRENCH. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Ib of the second term. 9 to 10:30. A course for beginners, including the essentials of the grammar and easy reading, with careful drill in pronunciation. Oral and written exercises. Professor Canfield.

IIa (= three-fifths of 2; or, with additional work, of 52; or, with more difficult reading, of 3).—FRENCH READINGS. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by IIb of the second term. 9 to 10:30. Reading of modern prose writings, with exercises in dictation and composition. Miss Gardner.

III.—THE POETRY OF THE NINETEENTH CENTURY. Two or three hours credit in the College or the Graduate School. 11 to 12, two hours credit for students who take only non-dramatic poetry; 10:30 to 12, three hours credit for those who take, in addition, dramatic poetry. This course will

study representative poems of the more important poets of the century. The lectures will deal especially with the origins and characteristics of the Romantic movement, the development within it of the tendencies that found expression in the poets of the Parnasse and the later reaction against these tendencies voiced by the symbolists. To be admitted to this course, students must have had the equivalents of French 3 and 4. Professor Canfield.

SPANISH.

Ia (= three-fifths of 21; or, with additional work, of 71).—ELEMENTARY SPANISH. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Ib of the second term. 9 to 10:30. A course for beginners, including the essentials of the grammar and easy reading, with careful drill in pronunciation. Oral and written exercises. Associate Professor Owen.

Iia (=three-fifths of 22; or, with additional work, of 72).—SPANISH GRAMMAR AND READINGS. Three hours credit in the College, School of Engineering, School of Fine Arts; or as an entrance unit if completed by Iib of the second term. 10:30 to 12. Reading of easy modern prose: Carrión-Aza, Pérez Galdós, Ibáñez, etc. Miss Gardner.

III (= 23 or one-third of 27).—MODERN WRITERS AND ORAL SPANISH COMPOSITION. One or three hours credit: three hours credit, 7:30 to 9, for students electing 23, and one hour credit, 8 to 9, for students electing 27. Course 23 deals with modern Spanish writers such as Alarcón, Becquer, Pereda, Valera. In course 27, Oral Composition, which is conducted wholly in Spanish, the idiomatic use of the spoken tongue is emphasized. Associate Professor Owen.

Second Term, July 20 to August 16.

FRENCH.

Ib (= two-fifths of 1; or, with additional work, of 51).—ELEMENTARY FRENCH, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts, thus making with Ia a five-hour credit in French 1 or 51. 9 to 10:30. Reading of simple prose texts, with exercises in dictation and elementary composition. Mr. Appelboom.

Iib (= two-fifths of 2 or, with additional work, of 52).—FRENCH GRAMMAR AND READING. Two hours credit in the College, School of Engineering or School of Fine Arts, thus making with Iia a five-hour credit in French 2 or 52. 10:30 to 12. This course will be given only if the demand warrants it. Mr. Appelboom.

III (= 4 or one-third of 9).—WRITTEN AND ORAL FRENCH COMPOSITION. One or two hours credit; one hour for students electing 9, and two hours for students electing 4. Practice in writing and speaking French. 10:30 to 12. This course may be given instead of Iib. Mr. Appelboom.

SPANISH.

Ib (= two-fifths of 21; or with additional work, of 71).—ELEMENTARY SPANISH, *completed*. Two hours credit in the College, School of Engineering, or School of Fine Arts. 9 to 10:30. This course supplements Ia, thus making a five-hour credit which may count as Spanish 21 or 71, or be used as an entrance unit. Mr. ———.

Iib (= two-fifths of 22; or, with additional work, of 72).—SPANISH GRAMMAR AND READING, *completed*. Two hours credit in the College, School of Engineering or School of Fine Arts, thus making with Iia a five-hour credit in Spanish 22 or 72. 7:30 to 9. This course will be given only if the demand warrants it. Mr. ———.

III (= 24 or one-third of 27).—WRITTEN AND ORAL SPANISH COMPOSITION. One or two hours credit; one hour for students electing 27 and two hours for students electing 24. 7:30 to 9. Systematic training in writing and speaking Spanish. This course may be given instead of IIb. Mr. ———.

SOCIOLOGY.

First Term, June 8 to July 19.

I (= 50).—ELEMENTS OF SOCIOLOGY. Two hours credit in the College or Graduate School. 8 to 9. A general course in sociology, treating of foundation principles. Its aim is to present briefly the origin, growth, structure and activities of society. The course is intended for those who wish to have a general knowledge of the subject and to lay the foundation for future study. It is especially helpful to teachers in acquainting them with the social life which they are preparing students to enter. Lectures and library work. Professor Blackmar.

II (nearly = 52).—SOCIAL PATHOLOGY. Two hours credit in the College or Graduate School. 9 to 10. A general study of poverty, pauperism, unemployment, epilepsy, insanity, degeneracy, etc., and their causes, prevention and cure. Conditions of the slums and rural populations, housing of the poor, social maladjustment, occupational diseases, etc. Professor Blackmar.

III.—SEMINAR OF SOCIAL INVESTIGATION. Two to six hours credit in the Graduate School. By appointment. A research course for advanced students. Applicants for admission to the seminar must satisfy the instructor of their preparation and ability to undertake original investigation. Each student may pursue a special line of social investigation. Professor Blackmar.

IV (nearly = 54).—PUBLIC OPINION. Two hours credit in the College or Graduate School. 10 to 11. A study of the origin and development of social control; public opinion and democracy; leadership and authority; phenomena of the public or ethnic mind; the relations of the individual and the group. Associate Professor Helleberg.

V (nearly = 61).—CONTEMPORARY SOCIETY IN THE UNITED STATES. Two hours credit in the College or Graduate School. 11 to 12. A general survey of the natural environment, population and its distribution, and industrial and social grouping, designed through the study of concrete social problems to correlate the various social sciences. Associate Professor Helleberg.

VI.—SEMINAR OF SOCIOLOGY. Two to six hours credit in the Graduate School. By appointment. This is a research course for advanced students. Applicants for admission to the seminar must satisfy the instructor of their preparation and ability to undertake original investigation. Each student may pursue a special line of work under the direction of the instructor. Associate Professor Helleberg.

Second Term, July 20 to August 16.

VII (nearly = 51).—PRINCIPLES OF APPLIED SOCIOLOGY. Two hours credit in the College or Graduate School. 9 to 10:30. An application of the theories and principles studied in courses 1 and 50 to social activities. A special study of social energy and social waste, with methods of conservation of social energy and elimination of social waste. Professor Bond.

VIII (nearly = 60).—RURAL SOCIOLOGY. Two hours credit in College or Graduate School. 10:30 to 12. A study of social conditions in rural districts and small towns. The agencies for social and economic betterment. The church and the schoolhouse as social centers. Political, social, and economic organizations. Professor Bond.

ZOOLOGY.

First Term, June 8 to July 19.

I (= 1).—ELEMENTARY ZOÖLOGY. Five hours credit in the College.

1a.—*Animal Biology*. Two hours credit in the College. 8 to 9. A lecture and recitation course dealing with the main groups of animal life and with general problems of biology. Assistant Professor Nowlin.

1b.—*Laboratory Zoölogy*. Three hours credit in the College. 9:30 to 12:30. Laboratory work upon the different types of animal life. Assistant Professor Nowlin.

NOTE.—1a may be taken alone or 1a and 1b may be taken together to cover the ground of 1, Elementary Zoölogy.

II.—PROTOZOÖLOGY. Three hours in the College or Graduate School. 9:30 to 12:30. A study of the group Protozoa with especial reference to those forms that are of importance to medicine. Students will be given training in methods of technique. Assistant Professor Nowlin.

III.—BIOLOGICAL SURVEY. Three or six hours credit in the College or Graduate School. Election in this course is open to chosen students who collect zoölogical specimens in the field, in connection with a camping expedition to be organized by the department. It will be open only to certain students especially qualified for the work, and application for enrollment should be made to the head of the department before May 15th. The aim of this work is to make a thorough survey of the fauna of Kansas. Many specimens will be collected and classified, and it is expected that the students will take copious field notes. Professor Allen.

IV.—RESEARCH. Various lines of research may be followed out by students whose previous preparation makes them eligible to pursue work of this character. Arrangements should be made in advance with the head of the department. By appointment. Assistant Professor Nowlin.

Second Term, July 20 to August 16.

V.—ORNITHOLOGY. Two hours credit in College or Graduate School. 7:30 to 9. A field course. Students will make regular excursions into the field in order to study the living birds and their habits. The large collection in the museum will be available for study. Assistant Professor Douthitt.

VI.—HEREDITY IN RELATION TO EUGENICS. Two hours in the College. 10:30 to 12. Lectures and laboratory. An exposition of the biological laws of eugenics with emphasis upon recent investigations in heredity. This will be found of especial value to students of education, sociology, medicine, etc. Assistant Professor Douthitt.

**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION XI
UNIVERSITY EXTENSION DIVISION**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13, Monday, Tuesday, Wednesday—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Topeka.

THE FACULTY.

FRANK STRONG, Ph. D., Chancellor of the University.
F. R. HAMILTON, Ph. B., Director of University Extension Division.
H. G. INGHAM, A. B., Secretary of Correspondence-Study Department.

EDGAR HENRY SUMMERFIELD BAILEY, Ph. D., Professor of Chemistry and Metallurgy.
ALEXANDER MARTIN WILCOX, Ph. D., Professor of Greek Language and Literature.
LUCIUS ELMER SAYRE, Ph. M., Professor of Pharmacy.
FRANK WILSON BLACKMAR, Ph. D., Professor of Sociology.
CHARLES GRAHAM DUNLAP, Litt. D., Professor of English Literature.
OLIN TEMPLIN, A. M., Professor of Philosophy.
EDWIN MORTIMER HOPKINS, Ph. D., Professor of Rhetoric and English Language.
FRANK HEYWOOD HODDER, Ph. M., Professor of American History and Political Science.
ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.
ARTHUR TAPPAN WALKER, Ph. D., Professor of Latin Language and Literature.
WILLIAM CHASE STEVENS, M. S., Professor of Botany.
ARVIN SOLOMON OLIN, A. M., LL. D., Professor of Education.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
IDA HENRIETTA HYDE, Ph. D., Professor of Physiology.
JAMES NAISMITH, M. D., Professor of Physical Education.
SAMUEL JOHN HUNTER, A. M., Professor of Entomology.
P. F. WALKER, M. M. E., Professor of Mechanical Engineering.
L. D. HAVENHILL, Ph. M., Professor of Pharmacy.
FREDERICK EDWARD KESTER, Ph. D., Professor of Physics.
GEORGE CARL SHAAD, B. S., E. E., Professor of Electrical Engineering.
SAMUEL J. CRUMBINE, M. D., Professor of Preventative Medicine.
MERLE THORPE, A. B., Professor of Journalism.
HARRY ALVIN MILLIS, Ph. D., Professor of Economics.
HERBERT ALLEN RICE, C. E., Professor of Civil Engineering.
BENNETT MILLS ALLEN, Ph. D., Professor of Zoölogy.
GOLDWIN GOLDSMITH, Ph. B., Professor of Architecture.
CLEMENT C. WILLIAMS, B. S., C. E., Professor of Railway Engineering.
ELMER FRANKLIN ENGEL, A. M., Professor of German.
JOHN NICHOLAS VAN DER VRIES, Ph. D., Professor of Mathematics.
ARTHUR MACMURRAY, A. B., M. O., Professor of Public Speaking.
ELIZABETH CADE SPRAGUE, Professor of Home Economics.
RAYMOND ALFRED SCHWEGLER, A. M., Professor of Education.

- ARTHUR JEROME BOYNTON, A. M., Professor of Economics.
ARTHUR CLARK TERRILL, E. M., A. M., Professor of Mining and Ore Dressing.
FREDERICK JAMES KELLY, Ph. D., Professor of Education.
MILES WILSON STERLING, A. M., Associate Professor of Greek.
HANNAH OLIVER, A. M., Associate Professor of Latin.
SELDEN LINCOLN WHITCOMB, A. M., Associate Professor of English Literature.
MARTIN EVERETT RICE, M. S., Associate Professor of Physics.
CLARENCE ADDISON DYKSTRA, A. B., Associate Professor of History.
ALBERTA LINTON CORBIN, Ph. D., Associate Professor of German.
GEORGE JUSSEN HOOD, B. S., Associate Professor of Mechanical Drawing.
WILLIAM JACOB BAUMGARTNER, A. M., Associate Professor of Zoölogy.
HENRY OTTO KRUSE, A. M., Associate Professor of German.
LEON NELSON FLINT, A. B., Associate Professor of Journalism.
CLARENCE CORY CRAWFORD, Ph. D., Associate Professor of European History.
EARL WALTER MURRAY, A. B., Associate Professor of Latin.
WILLIAM SAVAGE JOHNSON, Ph. D., Associate Professor of English Literature.
WILLIAM HENRY TWENHOFEL, Ph. D., Associate Professor of Geology.
VICTOR EMANUEL HELLEBERG, LL. B., Associate Professor of Sociology.
FREDERICK HUBBARD SIBLEY, M. E., Associate Professor of Mechanical Engineering.
CHARLES ARTHUR HASKINS, B. S., Associate Professor of Sanitary Engineering.
MARGARET LYNN, A. M., Associate Professor of English Literature.
ELISE NEUENSCHWANDER, Ph. D., Associate Professor of Romance Languages.
HENRY CAMP ALLEN, A. M., Associate Professor of Chemistry.
WILLIAM WATSON DAVIS, Ph. D., Associate Professor of American History and Political Science.
CLARENCE ANTHONY JOHNSON, B. S., Associate Professor of Electrical Engineering.
ALICE LITTLEJOHN GOETZ, M. D., Associate Professor of Physical Education.
ALFRED HIGGINS SLUSS, B. S., Associate Professor of Mechanical Engineering.
WILLIAM J. V. DEACON, Associate Professor of Preventative Medicine.
CHARLES MORGAN STERLING, A. B., Assistant Professor of Pharmacognosy.
EDWIN FISKE STIMPSON, B. S., Assistant Professor of Physics.
CHARLES COCHRAN, Assistant Professor of Mechanical Drawing.
JAMES EDWARD TODD, A. M., Assistant Professor of Geology and Mineralogy.
CALVERT JOHNSON WINTER, Ph. B., Assistant Professor of Romance Languages.
CLIFFORD CAUDY YOUNG, A. B., Assistant Professor of Chemistry, and Director of State Water Survey.
FREDERICK A. G. COWPER, A. M., Assistant Professor of Romance Languages.
HERBERT E. JORDAN, Ph. D., Assistant Professor of Mathematics.

GEORGE ELLSWORTH PUTNAM, B. Litt., Assistant Professor of Economics.
 WILLIAM REES B. ROBERTSON, Ph. D., Assistant Professor of Zoölogy.
 HERBERT BARKER HUNGERFORD, A. M., Assistant Professor of Entomology.
 FREDERICK WILLIAM BRUCKMILLER, M. S., Chemist of the State Water Survey.

EDMUND DRESSER CRESSMAN, Ph. D., Assistant Professor of Latin.
 CHARLES HOMER TALBOT, A. B., Head of the Municipal Reference Bureau.
 JOHN DILLON GARVER, B. S., Assistant Professor of Mechanical Engineering.

RALPH EMERSON CARTER, A. M., Assistant Professor of Education.
 FRANK LOGAN BROWN, B. S., Assistant Professor of Mechanics.
 HOWARD TEMPLETON HILL, B. S., Assistant Professor of Public Speaking.
 HERMAN DOUTHITT, A. M., Assistant Professor of Zoölogy.

CHESTER A. BUCKNER, A. M., Assistant Professor of Education.
 HARLEY ASHTON ROBERTS, B. S., Assistant Professor of Civil Engineering.
 ELLIS BAGLEY STOUFFER, Ph. D., Assistant Professor of Mathematics.
 HERBERT W. NUTT, Ph. B., Assistant Professor of Education.

WILLIAM M. DUFFUS, A. M., Assistant Professor of Economics.
 GRACE MIRIAM CHARLES, Ph. D., Assistant Professor of Botany.
 JACOB OSCAR JONES, Ph. B., Assistant Professor of Hydraulics.

JOHN WAINWRIGHT EVANS, A. B., Assistant Professor of Journalism.
 AMIDA STANTON, A. M., Instructor in Romance Languages.

HELEN MAUDE CLARKE, Ph. D., Instructor in Correspondence Study.
 HELEN GAILE JONES, Ph. B., Instructor in German.

HUBERT WILTFONG, Instructor in Forging.
 NELLIE MAY STEVENSON, A. B., Instructor in Correspondence Study.
 HOMER OTIS LICHTENWALTER, B. S., Instructor in Chemistry.

HEARTY EARL BROWN, A. M., Instructor in Rhetoric.
 SARA GRANT LAIRD, A. M., Instructor in Rhetoric.

MYRTLE GREENFIELD, A. M., Bacteriologist of the State Water Survey.
 CHARLES BAILE DRAKE, A. B., Instructor in Romance Languages.

HARRY V. E. PALMBLAD, A. M., Instructor in German.
 HAZEL KATHERINE ALLEN, Ph. B., Instructor in Home Economics.

HAZEL PRATT, A. B., Instructor in Physical Education.
 AVIS GWINN, A. B., Instructor in Home Economics.

FRANCIS ELLIS JOHNSON, A. B., E. E., Instructor in Electrical Engineering.

GLADYS ELIZABETH ELLIOTT, A. B., Instructor in Physical Education.

RICHARD LEONIDAS GRIDER, E. M., Instructor in Mining.

WALTER BLAINE BODENHAFFER, A. M., Instructor in Sociology.

PETER A. F. APPELBOOM, Instructor in Romance Languages.

ADMINISTRATIVE COMMITTEE.

F. R. HAMILTON, *Chairman.*

L. D. HAVENHILL.

M. SKIDMORE.

F. H. SIBLEY.

R. M. OGDEN.

W. H. JOHNSON.

C. C. CRAWFORD.

The University Extension Division.

The University Extension Division consists of four departments: Correspondence-Study, General Information, Municipal Reference, Child Welfare.

NOTE.—Bulletins giving detailed information in regard to each of these departments will be sent on request.

THE DEPARTMENT OF CORRESPONDENCE-STUDY.

PURPOSE.

The purpose of the Department of Correspondence-Study is to assist those who have not been able to secure a higher education through the regular channels either to inform themselves on some particular subject or to prepare for College work in residence.

HISTORY.

In 1891 University Extension had its beginning at the University of Kansas in courses of lectures, both informational and cultural, given at various points in the state by University professors. The idea of extending the University's usefulness was further developed in 1903 by the opening of a Summer Session. The establishment, in 1909, of the Correspondence-Study Department of the University Extension Division was the final step in the effort to make the University serve in every way possible the educational needs of the state.

GRADES OF WORK OFFERED.

Most of the work offered is of university grade, but certain high-school courses are provided, and the number of vocational courses is being increased.

THE SYSTEM.

PROCEDURE. The student who wishes to undertake correspondence study should first select such course or courses as he may desire to take, and should fill out the blank with all the information called for, returning it with the required fee to the office of the Extension Division.

THE LESSON SHEETS. If the instructor approves the application, the first lesson will be sent, with instructions for study and methods of preparation, and directions for returning lesson sheets and reports. Each lesson will be returned to the student with such corrections, explanations, and suggestions as may be needed. Lists of books, assignments for reading, and all necessary assistance will be furnished throughout the course, so that no student will be left without adequate aid and guidance. Questions on the subject in hand are at all times encouraged.

Each assignment contains questions to test the student's methods of work as well as his understanding of the ground covered. After pre-

paring for recitation the student writes his answers to the questions and returns them, together with a statement of any difficulties which may have arisen during his study.

BY WHOM PREPARED. These courses are prepared by the members of the University Faculty, and each represents a definite amount of work, corresponding to an equivalence of work done in residence at the University or in the standardized schools of our educational system.

THE UNIT COURSE. The unit course is divided, where practicable, into forty assignments, representing a five-hour course in residence. Such a course represents at least an amount of work equal to that done in residence at the University in a study of five full recitation-hours per week for one semester or half year. It is assumed that this work may be done by the average student in forty weeks with a minimum leisure for study of one hour per day, six days in the week. It is, however, the student's privilege to pursue his studies as rapidly as he is able. Shorter courses are ordinarily divided into fifths of the unit course of forty assignments, corresponding to three-hour, two-hour, or one-hour courses in resident work at the University. A three-hour course in residence, then, would be covered by correspondence teaching in twenty-four assignments, and shorter courses in proportion. Two assignments in correspondence approximately cover the ground in quantity of a week's work in residence.

EXAMINATIONS. Examinations are optional with the student, but are required where credits are sought. These examinations must be taken at the University, or under conditions approved by the University. In the latter case, arrangements may often be made with the local superintendent of schools to conduct the examination.

Regulations.

1. Students may begin correspondence courses at any time during the year, but the Department can not guarantee that all the courses will be given during the summer months.

2. For admission to the Correspondence-Study Department no preliminary examination is required. The student is required to fill out an application blank giving such information as may be helpful in adapting the instruction to the personal needs of each student.

3. Students who undertake correspondence-study work for University credit must state this fact in advance and comply with all the requirements of the University.

4. Persons who seek a University degree must conform to all the requirements exacted by the college or school in which such degree is sought. A maximum of one-half the required credits for the A.B. degree may be accumulated through correspondence. The work of the earlier part of the course is more likely to be available for correspondence study. The last thirty hours must be taken in residence.

5. Combinations of correspondence study and the residence work of the Summer Session are possible and recommended.

6. For the benefit of the Department it is desired that the applicant state fully the purpose he has in view in taking the work, and also in detail such educational advantages, training or experience as he may have had. The Department endeavors to meet the needs of the individual student by advice and suggestions, as well as by formal instruction, but whenever it finds that the course elected is not for the best interests of the student, it reserves the right to reject the application, or to advise change or discontinuance.

7. Correspondence students will be expected to complete a unit course within twelve months from the time of enrollment.

8. During an instructor's vacation a substitute will be provided to carry on such course or courses, if possible, or the time for completing the course will be extended.

9. No fee is refunded because of a student's inability to enter upon or pursue a course for which he has once registered. If an application for instruction is rejected, the fee is returned.

10. Each correspondence course is equivalent to the corresponding residence course, and commands credit unless definite statement is made to the contrary.

11. Not more than two courses may be carried through correspondence study at one time. Each subject listed under the various departments is a course; for example: first-year English is one course, German I is one course.

12. Students enrolling for credit must meet the prerequisite conditions for each course. This regulation may be waived by the instructor for a student enrolling not for credit.

Special Engineering Regulations.

1. Not more than one-fourth of the number of unit hours of credit required for graduation in any engineering department may be obtained through correspondence study.

2. Not more than seven hours of credit in sequence in courses which are interdependent may be obtained through correspondence.

3. A failure in any branch in residence may not be made up through correspondence.

University Credit.

1. University credit can be granted only to students who have met the entrance requirements of the University. Upon satisfactory completion of a correspondence course designed for credit, the student will be awarded a certificate of credit in the University. Other students' grades will be recorded merely in the files of the department and certificates issued for the same.

2. The maximum credit granted for work done by correspondence study may not exceed one-half the unit hours required for graduation.

3. At the completion of each correspondence-study course for University credit the student shall pass an examination held under the direction of the instructor giving such course, or by some one designated by the University for that purpose.

4. Work taken for credit may not be done by any student while in attendance at any institution of learning.

5. Admission credit is given for courses covering college entrance requirements which are satisfactorily completed and passed by examination.

6. University credit is given for courses of college grade satisfactorily completed and passed by examination.

7. If the student has a record of residence work in the University, credits gained from correspondence courses are immediately transferred to that record; if not, they are held in the Correspondence-Study Department until the student secures such a record covering one year of study in residence.

8. All courses offered by the Correspondence-Study Department, whether taken for University credit or not, are on a uniform basis in reference to the amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be awarded certificates of the grade in which the work is taken.

THE HOUR. The term "hour" means one hour of class work a week for one semester, or half year. The unit course is a five-hour course; that is, one in which the class meets for one hour five days in the week for a half year. One hundred and twenty hours of credit are required to obtain the A. B. degree.

EXPENSES.

FEES. The only fee charged is the incidental fee of \$10 a year for residents of Kansas, or \$15 for nonresidents. This applies to all schools of the University. For this amount the student is entitled to tuition for a calendar year, and during that period he may carry two courses at a time. The incidental fee must be paid each year that the student re-enrolls for study. If a correspondence student should later come into residence at the University, he would then be required to pay the \$5 matriculation fee. The fee for correspondence-classroom study is \$15 per year.

PAYMENTS. The incidental fee may be paid in monthly installments of five dollars when the student finds it necessary. In this plan the general rule of payment in advance applies. No extra charge is exacted for a course where payments are made by installments. *But in every case at least five dollars of the required fees must accompany the application.*

HOW TO REMIT. Money should be sent in the form of postal or express money order, or Kansas City or Chicago draft, made payable to the University of Kansas. Mail to the University Extension Division, Lawrence, Kan.

BOOKS AND OUTFIT. All necessary textbooks, drawing outfits, apparatus, dissecting material, chemicals, etc., are extra, and must be procured by the student. The student also pays postage on lessons one way.

TRAVELING LIBRARIES. An arrangement has been made with the State Traveling Libraries Commission at Topeka to furnish reference books in loan libraries of five to twelve volumes, a separate library for each of such courses. A library covering the work of a certain course may thus be obtained and used by the student under the following terms:

First. A fee of one dollar is charged and express both ways.

Second. The books may be kept six months.

Third. The student wishing to retain books over six months may do so by paying an extension fee of twenty-five cents.

The courses which need traveling libraries may be learned on application.

CORRESPONDENCE-CLASSROOM STUDY.

If a group of twelve or more students registers to pursue the same course of study, arrangements will be made, when possible, for regular weekly visits of instructors who will conduct classes and hold personal conferences with students.

The tuition for each student enrolling for any one class is \$5 per term of twelve weeks.

For a fee of \$15 per year the student may enroll for as many classes as may be available, no more than two classes, however, to be pursued at the same time.

The Extension Division can not guarantee to supply all demands of this nature, but will do so as far as the time of the instructors and the facilities permit.

COURSES OF INSTRUCTION

ASTRONOMY.

COURSE 1.—DESCRIPTIVE ASTRONOMY. Twenty-four assignments, three hours College credit.

BOTANY.

COURSE 1.—ELEMENTARY BOTANY. Forty assignments, five hours College credit.

COURSE 2.—GENERAL MORPHOLOGY OF PLANTS. Forty assignments, five hours College credit.

COURSE 3.—PLANT HISTOLOGY. Forty assignments, five hours College credit.

CHEMISTRY.

COURSE 1.—ELEMENTARY CHEMISTRY. Forty assignments, five hours College credit.

COURSE 2.—SANITARY AND APPLIED CHEMISTRY. Forty assignments, five hours College or Engineering credit.

COURSE 3.—QUANTITATIVE ANALYSIS. Forty assignments, five hours College or Engineering credit.

COURSE 4.—A SPECIAL COURSE IN CHEMICAL WATER ANALYSIS. Part I, forty assignments, five hours College credit. Part II, twenty assignments, two and one-half hours College credit.

COURSE 5.—QUALITATIVE ANALYSIS. Forty assignments, five hours College or Engineering credit.

COURSE 6.—CHEMISTRY OF FOOD PRODUCTS. Forty assignments, five hours College credit.

ECONOMICS.

COURSE 1.—ELEMENTS OF ECONOMICS. Forty assignments, five hours College credit.

COURSE 2.—BANKING. Twenty-four assignments, three hours College credit.

COURSE 3.—LABOR PROBLEMS. Twenty-four assignments, three hours College credit.

COURSE 4.—LIFE INSURANCE. Sixteen assignments, two hours College credit.

EDUCATION.

COURSE 1.—HISTORY OF ANCIENT AND MEDIEVAL EDUCATION. Twenty-four assignments, three hours College or Education credit.

COURSE 2.—HISTORY OF MODERN EDUCATION. Twenty-four assignments, three hours College or Education credit.

COURSE 3.—PRINCIPLES OF EDUCATION. Twenty-four assignments, three hours College or Education credit.

COURSE 4.—ADMINISTRATION OF PUBLIC EDUCATION. Twenty-four assignments, three hours College or Education credit.

COURSE 5.—SCHOOL HYGIENE. Twenty-four assignments, three hours College or Education credit.

COURSE 6.—EDUCATIONAL PSYCHOLOGY. Twenty-four assignments, three hours College or Education credit.

COURSE 7.—METHODS AND CLASSROOM MANAGEMENT. Twenty assignments, one-half unit of entrance credit.

ENGINEERING.

COURSE 1.—FREE-HAND AND MECHANICAL DRAWING. Twenty-four assignments, three hours Engineering credit.

COURSE 2.—MACHINE DRAWING. Twenty-four assignments, three hours Engineering credit.

COURSE 3.—ELEMENTARY MECHANICS. Not for credit. Sixteen assignments.

COURSE 4.—MECHANISM AND MACHINE DESIGN. Not for University credit. Thirty-two assignments.

COURSE 5.—HIGHWAY ENGINEERING. Sixteen assignments, two hours Engineering credit.

COURSE 6.—ENGINES AND BOILERS. Twenty-four assignments, three hours Engineering credit.

COURSE 7.—DIRECT-CURRENT ELECTRICAL ENGINEERING. Not for credit. Thirty-two assignments.

COURSE 8.—ELEMENTS OF ALTERNATING-CURRENT ELECTRICAL ENGINEERING. Not for credit. Thirty-two assignments.

COURSE 9.—ELEMENTS OF ILLUMINATION. Not for credit. Twenty-four assignments.

COURSE 10.—MINE SURVEYING OR MINE ENGINEERING. Not for credit. Forty assignments.

COURSE 12.—COAL MINING. Credit may be given to students having sufficient preparation. Forty assignments, five hours Engineering credit. For additional mining courses, see announcement of courses 50 to 60.

*COURSE 14.—ELEMENTARY MINERALOGY. Forty assignments, five hours College or Engineering credit.

*COURSE 15.—GENERAL GEOLOGY. Forty assignments, five hours College or Engineering credit.

*COURSE 16.—ECONOMIC GEOLOGY. Forty assignments, five hours College or Engineering credit.

COURSE 17.—THE ELEMENTS OF TELEPHONY. Not for credit. Twenty-four assignments.

COURSE 18.—REINFORCED CONCRETE. Not for credit. Twenty-four assignments.

COURSE 19.—REINFORCED CONCRETE. May be taken only by students of advanced standing and graduate engineers. Twenty-four assignments, three hours Engineering credit.

COURSE 20.—ARCHITECTURAL DRAWING. Three hours Engineering credit will be given, provided the work of five assignments is done at the University under personal instruction. Part I, twenty assignments; part II, twenty assignments.

COURSE 21.—ARCHITECTURAL DESIGN. Three hours Engineering credit will be given, provided the work of five assignments is done at the University under personal instruction. Part I, twenty assignments; part II, twenty assignments.

COURSE 23.—WORKS MANAGEMENT. May be taken for engineering credit by students who have done a sufficient amount of work to give them standing with the Junior class. Sixteen assignments, two hours Engineering credit.

COURSE 24.—PLANE SURVEYING. When accompanied by field work of a satisfactory nature, engineering credit will be given. Forty assignments, five hours Engineering credit.

COURSE 25.—RAILWAY SURVEYING. Forty assignments, five hours Engineering credit.

* See, also, courses 1, 2 and 3 under Mineralogy and Geology.

COURSE 25a.—RAILWAY DRAWING. Twenty-four assignments, one hour Engineering credit.

COURSE 26.—HYDRAULICS. Twenty-four assignments, three hours Engineering credit.

Vocational Courses.

(University credit is not given.)

GROUP A. For apprentices and employees in railroad shops, garages, and general machine shops:

| No. | Subject. | No. of assignments. |
|-----|---|---------------------|
| 1. | Shop Mathematics: | |
| | (a) Arithmetic and Practical Mechanics..... | 20 |
| | (b) Algebra, Geometry, Trigonometry, and Logarithms (optional)..... | 20 |
| 2. | Drawing: | |
| | (a) Free-hand | 10 |
| | (b) Mechanical | 10 |
| 40. | Bookkeeping and Accounting..... | 10 |
| 3. | Machine Drafting | 20 |
| 10. | Elements of Chemistry..... | 10 |
| 11. | Materials of Machine Construction..... | 10 |
| 41. | Factory Accounting (optional)..... | 10 |
| 21. | Gas, Gasoline, and Oil Engines..... | 10 |
| 22. | Automobile Engineering | 10 |

GROUP B. For apprentices and workers in the carpenter's trade:

| No. | Subject. | No. of assignments. |
|-----|---|---------------------|
| 1. | Shop Mathematics | 20 |
| 2. | Drawing: | |
| | (a) Free-hand | 10 |
| | (b) Mechanical | 10 |
| 3. | Machine Drafting (optional)..... | 10 |
| 4. | Architectural Drawing | 20 |
| 5. | Architectural Design | 20 |
| 6. | Elements of Graphic Statics..... | 10 |
| 12. | Materials of Building Construction..... | 10 |
| 40. | Bookkeeping and Accounting..... | 10 |
| 42. | Cost Keeping for Contractors..... | 10 |
| 43. | Law of Contracts (optional)..... | 10 |

More Architectural Drawing and Design will be given if desired.

GROUP C. For power-plant engineroom men:

| No. | Subject. | No. of assignments. |
|-----|--|---------------------|
| 1. | Shop Mathematics | 20 |
| 2. | Drawing: | |
| | (a) Free-hand (optional) | 10 |
| | (b) Mechanical (optional) | 10 |
| 20. | Steam Engineering: | |
| | Part 1. Fuels and Heat | 10 |
| | Part 2. Boilers | 10 |
| | Part 3. Engines and Turbines | 10 |
| | Part 4. Condensers and Pumps..... | 10 |
| 21. | Gas, Gasoline, and Oil Engines (optional)..... | 10 |
| 24. | Engine Calculations: Power and Economy..... | 10 |
| 25. | Engine Valve Gears and Governors (optional)..... | 10 |
| 27. | Engine Room Practice..... | 10 |
| 40. | Bookkeeping and Accounting (optional)..... | 10 |
| 28. | Power Plant Records..... | 10 |
| 29. | Direct Current Electricity: | |
| | Part 1. Theory | 10 |
| | Part 2. Machinery Application | 10 |
| 30. | Alternating Current Electricity: | |
| | Part 1. Theory | 10 |
| | Part 2. Machinery Application | 10 |
| 31. | Switchboard Construction and Handling Apparatus..... | 10 |

NOTE.—The Drawing should be taken if the student desires to take Valve Gears and become able to design slide valves.

GROUP D. For power-plant boiler-room men:

| <i>No.</i> | <i>Subject.</i> | <i>No. of assignments.</i> |
|------------|--|----------------------------|
| 1. | Shop Mathematics | 20 |
| 20. | Steam Engineering: | |
| | Part 1. Fuels and Heat..... | 10 |
| | Part 2. Boilers | 10 |
| | Part 3. Engines and Turbines..... | 10 |
| | Part 4. Condensers and Pumps..... | 10 |
| 10. | Chemistry (boiler-room questions)..... | 10 |
| 23. | Boiler Calculations: Power and Efficiency..... | 10 |
| 26. | Boiler Room Practice..... | 10 |
| 40. | Bookkeeping and Accounting (optional) | 10 |
| 28. | Power Plant Records..... | 10 |

GROUP E. For coal and salt miners:

| <i>No.</i> | <i>Subject.</i> | <i>No. of assignments.</i> |
|------------|---|----------------------------|
| 51. | Mine Accidents: Causes and Prevention..... | 15 |
| 52. | Origin and Occurrence of Coal..... | 10 |
| 58. | Origin and Occurrence of Salt (optional)..... | 10 |
| 53. | Explosives | 10 |
| 54. | Mining Methods | 10 |
| 55. | Ventilation of Mines..... | 10 |
| 60. | First Aid and Rescue Work (special work)..... | 10 |
| 56. | Haulage and Hoisting..... | 10 |
| 40. | Bookkeeping and Accounting (optional)..... | 10 |

Men engaged in any lines of mining work may take the above subjects, or any portion of them. Young men who are looking forward to the position of pit boss will find much of it to be of great value to them. Any one so desiring may enroll in studies in English language, mathematics, and other subjects.

- 1.—SHOP MATHEMATICS. Forty assignments.
- 2.—DRAWING. Twenty assignments.
- 3.—MACHINE DRAFTING. Ten or twenty assignments.
- 4.—ARCHITECTURAL DRAWING. Twenty assignments.
- 5.—ARCHITECTURAL DESIGN. Twenty assignments.
- 6.—ELEMENTS OF GRAPHIC STATICS. Ten assignments.
- 10.—ELEMENTS OF CHEMISTRY. Ten assignments.
- 11.—MATERIALS OF MACHINE CONSTRUCTION. Ten assignments.
- 12.—MATERIALS OF BUILDING CONSTRUCTION. Ten assignments.
- 20.—STEAM ENGINEERING. Forty assignments.
- 21.—GAS, GASOLINE, AND OIL ENGINES. Ten assignments.
- 22.—AUTOMOBILE CONSTRUCTION. Fifteen assignments.
- 23.—BOILER CALCULATIONS: POWER AND EFFICIENCY. Ten assignments.
- 24.—ENGINE CALCULATIONS: POWER AND EFFICIENCY. Ten assignments.
- 25.—VALVE GEARS AND GOVERNORS. Ten assignments.
- 26.—BOILER ROOM PRACTICE. Ten assignments.
- 27.—ENGINE ROOM PRACTICE. Ten assignments.
- 28.—POWER PLANT RECORDS. Ten assignments.
- 29.—DIRECT CURRENT ELECTRICITY. Twenty assignments.
- 30.—ALTERNATING CURRENT ELECTRICITY. Twenty assignments.
- 31.—SWITCHBOARDS AND CONTROLLING DEVICES. Ten assignments.
- 40.—BOOKKEEPING AND ACCOUNTING. Twelve assignments.
- 41.—FACTORY ACCOUNTING. Fifteen assignments.
- 42.—COST KEEPING FOR CONTRACTORS. Ten assignments.

- 43.—LAW OF CONTRACTS. Ten assignments.
- 50.—MINE ACCIDENTS: CAUSES AND PREVENTION. Fifteen assignments.
- 51.—GENERAL MINING. Twenty assignments.
- 52.—ORE DRESSING: CONCENTRATION OF ORES. Twenty assignments.
- 53.—EXPLOSIVES. Ten assignments.
- 54.—VENTILATION OF MINES. Ten assignments.
- 55.—COAL MINING. Twenty assignments.
- 58.—ORIGIN AND OCCURRENCE OF SALT. Ten assignments.
- * 60.—FIRST AID AND RESCUE WORK.

* Since this work will be carried out in coöperation with the federal bureau officials, it will be necessary to conform to the schedules of the car, and the instruction will be given by special arrangement instead of by the regular method of fixed assignments.

ENGLISH.

COURSE 1.—RHETORIC AND ENGLISH COMPOSITION. Forty assignments, five hours College or Engineering credit.

COURSE 2.—NARRATION AND DESCRIPTION. Forty assignments, five hours College credit.

COURSE 3.—ENGLISH LITERATURE. Forty assignments, five hours College credit.

COURSE 4.—HISTORY OF ENGLISH LITERATURE. Forty assignments, five hours College credit.

COURSE 5.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Forty assignments, 5 hours College credit.

COURSE 7.—AMERICAN LITERATURE. Twenty-four assignments, three hours College credit.

COURSE 8.—VICTORIAN LITERATURE. Forty assignments, five hours College credit.

COURSE 9.—HISTORY OF THE ENGLISH DRAMA. Twenty-four assignments, three hours College credit.

COURSE 10.—BROWNING. Twenty-four assignments, three hours College credit.

COURSE 11.—MODERN ENGLISH GRAMMAR. Sixteen assignments, two hours College credit.

COURSE 12.—ELIZABETHAN DRAMA (EXCLUSIVE OF SHAKSPERE). Twenty-four assignments, three hours College credit.

ENTOMOLOGY.

COURSE 1.—INTRODUCTORY ENTOMOLOGY. Forty assignments, five hours College credit.

COURSE 2.—SYSTEMATIC ENTOMOLOGY. Sixteen assignments, two hours College credit.

COURSE 3.—APPLIED ENTOMOLOGY. Sixteen assignments, two hours College credit.

COURSE 4.—THE ROLE OF INSECTS IN THE SPREAD OF DISEASE. Not for University credit. Sixteen assignments.

GERMAN.

COURSE 1.—GERMAN I. Forty assignments, five hours College or Engineering credit.

COURSE 2.—GERMAN II. Forty assignments, five hours College credit.

COURSE 3.—GERMAN III. Forty assignments, five hours College credit.

COURSE 4.—GERMAN IV. Forty assignments, five hours College credit.

COURSE 5.—(GERMAN 8 AND 9.) SCHILLER'S DRAMAS. Forty assignments, five hours College credit.

COURSE 6.—(GERMAN V.) COMPOSITION. Twenty-four assignments, three hours College credit.

COURSE 7.—GOETHE'S FAUST (Parts I and II). Twenty-four assignments, three hours College credit.

COURSE 8.—THE CLASSIC DRAMA. Forty assignments, five hours College credit.

GREEK.

COURSE 1.—ELEMENTARY GREEK. Forty assignments, five hours College credit.

COURSE 2.—XENOPHON'S ANABASIS. Forty assignments, five hours College credit.

COURSE 3.—HOMER'S ILIAD. Twenty-four assignments, three hours College credit.

HIGH-SCHOOL BRANCHES.

The high-school work now offered is as follows:

ENGLISH:

| | | |
|---------------------------|------------------|----------------|
| First year | (40 assignments) | one unit. |
| Second year | (40 assignments) | one unit. |
| Third year | (40 assignments) | one unit. |
| Fourth year | (40 assignments) | one unit. |
| American Literature | (20 assignments) | one-half unit. |

LATIN:

| | | |
|-------------------------|------------------|-----------|
| Beginning | (40 assignments) | one unit. |
| Cæsar | (40 assignments) | one unit. |
| Cicero's Orations | (40 assignments) | one unit. |
| Virgil | (40 assignments) | one unit. |

MATHEMATICS:

| | | |
|----------------------------------|------------------|----------------|
| Elementary Algebra, Part A | (40 assignments) | one unit. |
| Elementary Algebra, Part B | (20 assignments) | one-half unit. |
| Plane Geometry | (40 assignments) | one unit. |
| Solid Geometry | (20 assignments) | one-half unit. |
| Plane Trigonometry | (20 assignments) | one-half unit. |

GERMAN:

| | | |
|-------------------|------------------|-----------|
| First year | (40 assignments) | one unit. |
| Second year | (40 assignments) | one unit. |
| Third year | (40 assignments) | one unit. |

HISTORY:

| | | |
|---------------------------|------------------|-----------|
| Ancient | (40 assignments) | one unit. |
| Medieval and Modern | (40 assignments) | one unit. |
| English | (40 assignments) | one unit. |
| American | (40 assignments) | one unit. |

FRENCH:

| | | |
|-------------------|------------------|-----------|
| First year | (40 assignments) | one unit. |
| Second year | (40 assignments) | one unit. |

SPANISH:

| | | |
|-------------------|------------------|-----------|
| First year | (40 assignments) | one unit. |
| Second year | (40 assignments) | one unit. |

PSYCHOLOGY (20 assignments) one-half unit.

METHODS AND MANAGEMENT (20 assignments) one-half unit.

HISTORY.

COURSE 1.—AMERICAN HISTORY. Forty assignments, five hours College credit.

COURSE 2.—ENGLISH HISTORY. Forty assignments, five hours College credit.

COURSE 3.—AMERICAN GOVERNMENT. Forty assignments, five hours College credit.

COURSE 4.—MUNICIPAL GOVERNMENT. Twenty-four assignments, three hours College credit.

COURSE 5.—MUNICIPAL PROBLEMS. Sixteen assignments, two hours College credit.

COURSE 6.—MODERN EUROPEAN HISTORY. Twenty-four assignments, three hours College credit.

HOME ECONOMICS.

COURSE 1.—HOME DECORATION. Sixteen assignments, two hours College credit.

COURSE 2.—FOOD AND NUTRITION. Twenty-four assignments, three hours College credit.

COURSE 3.—PUBLIC ASPECTS OF THE HOUSEHOLD. Twenty-four assignments, three hours College credit.

JOURNALISM.

COURSE 1.—THE THEORY AND PRACTICE OF ADVERTISING. Twenty-four assignments, three hours College credit.

COURSE 2.—THE NEWSPAPER. Twenty-four assignments, three hours College credit.

COURSE 3.—THE SHORT STORY. Twenty-four assignments, three hours College credit.

COURSE 4.—RETAIL ADVERTISING. See courses for retail merchant, page 21.

COURSE 5.—PRINTING AND NEWSPAPER COST. Eight assignments, not for credit.

LATIN.

COURSE 1.—ELEMENTARY LATIN. Forty assignments, one unit of entrance credit, or five hours College credit.

COURSE 2.—CÆSAR. Forty assignments, one unit of entrance credit, or five hours College credit.

COURSE 3.—CICERO'S ORATIONS. Forty assignments, one unit of entrance credit, or five hours College credit.

COURSE 4.—VIRGIL'S ÆNEID. Forty assignments, one unit of entrance credit, or five hours College credit.

COURSE 5.—PREPARATORY PROSE COMPOSITION. Twenty-four assignments, no credit.

COURSE 6.—CICERO'S DE SENECTUTE, AND PROSE COMPOSITION. Twenty-four assignments, three hours College credit.

COURSE 7.—HORACE'S ODES. Twenty-four assignments, three hours College credit.

COURSE 8.—PROSE COMPOSITION. Sixteen assignments, two hours College credit.

MATHEMATICS.

I.—College and University Grade.

COURSE 5.—PLANE TRIGONOMETRY. Sixteen assignments, two hours College or Engineering credit.

COURSE 6.—UNIVERSITY ALGEBRA. Twenty-four assignments, three hours College or Engineering credit.

COURSE 7.—ANALYTIC GEOMETRY. Thirty-two assignments, four hours College or Engineering credit.

II.—Special Course in Mathematics.

COURSE 1. (VOCATIONAL) SHOP MATHEMATICS. No University credit. Forty assignments.

MINERALOGY AND GEOLOGY.

*COURSE 1.—ELEMENTARY MINERALOGY. Forty assignments, five hours College or Engineering credit.

*COURSE 2.—GENERAL GEOLOGY. Forty assignments, five hours College or Engineering credit.

*COURSE 3.—ECONOMIC GEOLOGY. Forty assignments, five hours College or Engineering credit.

PHARMACY.

Pharmaceutical Chemistry.—Courses A.

A I.—Elementary Pharmacy Physics and Pharmacy Inorganic Chemistry. Twenty assignments.

A II.—Organic Pharmacy Chemistry, including a discussion of the organic chemicals of pharmacal interest. Should follow course A I. Twenty assignments.

Materia Medica.—Courses B.

B I.—Pharmacognosy with Botanical Introduction. Ten assignments.

B II.—A brief outline of Physiology and introduction to the subject of Materia Medica. Ten assignments.

B III.—Pharmacological and Therapy Dynamics. Fifteen assignments.

B IV.—Toxicology and Posology. Five assignments.

Pharmacy.—Courses C.

C I.—Descriptive Pharmacy. Terms, processes, and apparatus used in pharmacal operations. Seven assignments.

C II.—Metrology, Specific Gravity, and Pharmaceutical Arithmetic. Eight assignments.

C III.—Official Pharmacy. The pharmaceutical classification of medicines. Five assignments.

C IV.—Official Pharmacy. A critical discussion of the pharmaceutical preparations. Fifteen assignments.

C V.—Pharmacy Latin and Principles of Prescription Writing. Three assignments.

C VI.—Pharmaceutical Jurisprudence. Two assignments.

Independent Pharmacy Courses.

COURSE 1.—INTRODUCTORY PHARMACY. Twenty assignments.

COURSE 2.—ORGANIC MATERIA MEDICA. Twenty assignments.

COURSE 3.—PHARMACY PHYSIOLOGY. Twenty assignments.

PHILOSOPHY.

COURSE 1.—GENERAL PSYCHOLOGY. Twenty-four assignments, three hours College credit.

COURSE 2.—LABORATORY PSYCHOLOGY. Sixteen assignments, two hours College credit.

COURSE 3.—INTRODUCTION TO PHILOSOPHY. Sixteen assignments, two hours College credit.

* See, also, courses 12, 13 and 14, under Engineering.

COURSE 4.—HISTORY OF ANCIENT PHILOSOPHY. Twenty-four assignments, three hours College credit.

COURSE 5.—HISTORY OF MEDIEVAL AND MODERN PHILOSOPHY. Twenty-four assignments, three hours College credit.

COURSE 6.—ETHICS. Forty assignments, five hours College credit.

PHYSICAL EDUCATION.

COURSE 1.—SPORT AND GAMES. Sixteen assignments, two hours credit, School of Education.

COURSE 2.—THEORY OF PHYSICAL EDUCATION. Twenty-four assignments, three hours College credit.

The following courses do not carry University credit:

COURSE 3.—ATHLETICS FOR GIRLS.

COURSE 4.—PRACTICAL GYMNASICS.

COURSE 5.—FESTIVALS, PLAYS, AND GYMNASIC EXHIBITIONS.

PHYSICS.

COURSE 1.—ELEMENTARY PHYSICS. Twenty-four assignments, three hours College credit.

COURSE 2.—MECHANICS, HEAT, AND SOUND. Thirty-two assignments, four hours College or Engineering credit.

COURSE 3.—LIGHT, ELECTRICITY, AND MAGNETISM. Thirty-two assignments, four hours College or Engineering credit.

COURSE 4.—MECHANICS AND HEAT. Twenty-four assignments, three hours College credit.

COURSE 5.—SOUND, LIGHT, ELECTRICITY, AND MAGNETISM. Twenty-four assignments, three hours College credit.

COURSE 6.—THEORY OF ELECTRICITY AND MAGNETISM. Twenty-four assignments, three hours College credit.

PHYSIOLOGY.

COURSE 1.—ELEMENTARY PHYSIOLOGY. Forty assignments, five hours College credit.

COURSE 2.—GENERAL PHYSIOLOGY. Forty assignments, five hours College credit.

COURSE 3.—PHARMACY PHYSIOLOGY. Twenty assignments, two and one-half hours Pharmacy credit.

PUBLIC SPEAKING.

COURSE 1.—THE COMPOSITION OF PUBLIC ADDRESSES. Twenty-four assignments, three hours College credit.

ROMANCE LANGUAGES.

COURSE 1.—ELEMENTARY FRENCH (Part I). Forty assignments, five hours College or Engineering credit.

COURSE 2.—ELEMENTARY FRENCH (Part II). Forty assignments, five hours College or Engineering credit.

COURSE 3.—MODERN FRENCH PROSE. Twenty-four assignments, three hours College credit.

COURSE 4.—FRENCH COMPOSITION. Sixteen assignments, two hours College credit.

COURSE 5.—SCIENTIFIC FRENCH. Twenty-four assignments, three hours College credit.

COURSE 6.—FRENCH PROSE AND POETRY. Twenty-four assignments, three hours College credit.

COURSE 1.—ELEMENTARY SPANISH (Part I). Forty assignments, five hours College or Engineering credit.

COURSE 2.—ELEMENTARY SPANISH (Part II). Forty assignments, five hours College or Engineering credit.

COURSE 3.—MODERN SPANISH. Twenty-four assignments, three hours College credit.

COURSE 4.—SPANISH COMPOSITION. Sixteen assignments, two hours College credit.

COURSE 1.—ELEMENTARY ITALIAN. Forty assignments, five hours College or Fine Arts credit.

SOCIOLOGY.

COURSE 1.—ELEMENTS OF SOCIOLOGY. Twenty-four assignments, three hours College credit.

COURSE 2.—SOCIAL PATHOLOGY. Sixteen assignments, two hours College credit.

COURSE 3.—SOCIAL SURVEYS. Sixteen assignments, two hours College credit.

ZOOLOGY.

COURSE 1.—INTRODUCTORY ZOÖLOGY. Forty assignments, five hours College credit.

COURSE 2.—HISTOLOGY. Forty assignments, five hours College credit.

SPECIAL COURSES.

The following courses, for merchants and others, do not carry University credit.

Courses in Child Hygiene.

LYDIA ALLEN DEVILBISS, M. D., Director, Division of Child Hygiene.

COURSE 1a.—PRENATAL HYGIENE. A course for prospective and expectant mothers. Covers the hygiene of pregnancy and the care of the expectant mother; equipment for mother and baby; the confinement and convalescence. Five assignments.

COURSE 1b.—INFANT HYGIENE. The care of the child up to its second birthday. Includes the growth and development of a baby, also the proper food, clothing, nursery, habits and training. Ten assignments. Fee, \$5.

COURSE 2.—HOME NURSING FOR CHILDREN. The common diseases of childhood, how to prevent them and what to do for them. This course covers the germ theory of disease, quarantine, and care of contagious diseases. Health nursing, improving body resistance, elimination, care of the skin, stomach and intestinal disorders, and respiratory and circulatory diseases. Eight assignments. Fee, \$5.

Courses for the Retail Merchant.

COURSE 1.—RETAIL ADVERTISING. Ten assignments.

COURSE 2.—SALESMANSHIP. Ten assignments.

COURSE 3.—BOOKKEEPING. Twelve assignments.

COURSE 4.—ACCOUNTING PRINCIPLES. Sixteen assignments.

Other Special Courses.

COURSE 1.—WATER PURIFICATION. Ten assignments.

COURSE 2.—FIRE PROTECTION. Twelve assignments.

VITAL STATISTICS AND DEMOGRAPHY. Eight assignments.

GOVERNMENT AND CITIZENSHIP. Twenty-four assignments.

THE DEPARTMENT OF GENERAL INFORMATION.

The Department of General Information of the University Extension Division of the University of Kansas has been organized with the view of making knowledge more generally available to the people of Kansas. It coöperates with the schools and women's clubs, civic clubs, debating societies, and other similar organizations, and furnishes any available information to citizens of Kansas upon subjects of general interest. The department also issues bulletins on public questions.

LECTURES.

For several years the University of Kansas, through its Extension Division, has arranged for lectures by members of the University Faculty in the different towns in the state.

Single lectures are offered for entertainment, information, and culture, but the Department wishes to emphasize the courses or series of lectures which may be offered to serious-minded students, as affording, at least approximately, the intellectual discipline and information and cultural value of regular University work in residence.

The minimum length of a regular University Extension course is six lectures. Members of University Extension classes who are candidates for credit will be required, besides attendance at lectures, to do additional work prescribed by the lecturer, to include reference and other reading, conferences, and examinations. The maximum credit granted upon the satisfactory completion of such a course will be one semester hour. With the consent of the department concerned, students who are candidates for the master's degree may count *in absentia* work done in Extension lecture courses given by members of the University Faculty to the extent of twelve hours, allowing two hours for each course of twelve lectures.

Musicals by members of the Fine Arts Faculty are also offered.

A bulletin descriptive of the single lectures, courses of lectures, commencement addresses, and musicals offered to Kansas communities will be sent to any address on request.

WOMEN'S CLUBS.

This department offers assistance to any club as an organization or to the individual members. Outlines have been made that will enable clubs to make a comprehensive study of the subjects treated. These outlines are sent out as a two-weeks loan.

Wherever information upon a given topic is available it will be sent on request to individual club members.

PACKAGE LIBRARIES.

Package libraries giving information on specified subjects are sent out on request and may be retained for a period of two weeks.

LANTERN SLIDES.

Lantern slides designed to supplement instruction in schools, aid libraries and clubs in their educational work, and provide material for lectures and entertainment for various groups of people in the state, can be secured through the Extension Division of the University of Kansas.

Each set of slides is accompanied by a typewritten or printed lecture. These lectures can be supplied in duplicate and furnished in advance of the time for using the slides in order that the person who is to present the lecture may be entirely familiar with the slides and their description.

EDUCATIONAL MOTION PICTURE FILMS.

About seventy-five educational motion-picture films are now available for the schools and community organizations in Kansas.

DEBATING AND PUBLIC DISCUSSION.

The department has issued a bulletin on debating, and each year issues a bulletin containing references on the question to be argued by the Kansas High School Debating League. It stands ready to assist with references or collected material any other organization interested in debate.

The department gathers information on subjects of current popular interest and prepares it to be sent out in loan package libraries.

PLAY SERVICE.

In order to assist high-school teachers and amateur dramatic clubs in securing good plays quickly, and without too great an expense, the Extension Division has inaugurated a Play Service Bureau. Upon request this Bureau will recommend and send three or four plays as a three days' loan. Recitations suitable for county contests are sent as a one-week loan.

THE DEPARTMENT OF MUNICIPAL REFERENCE.

The Municipal Reference Department, established in 1910, attempts to do for city officials and citizens what a legislative reference library does for legislators. This department acts as a clearing-house for information and ideas concerning municipal problems, such, for example, as those connected with public utilities, franchises, municipal legislation and ordinances, sanitation, city planning, public improvements, uniform accounting, etc. The experience of cities of Kansas and other states is brought together and analyzed, and the result placed at the service of the municipalities of this state. Copies of model city ordinances and regulations on many municipal subjects are kept on file and furnished on request of city officers and citizens. The coöperation of the faculties of the College, the School of Engineering, and the School of Law enables the department to serve as an information bureau of wide scope and effectiveness for the benefit of the officials and people of the municipalities of the state.

The League of Kansas Municipalities, organized in connection with the Municipal Reference Department, is made up of Kansas cities, the officials of which meet each year in three days' convention for the discussion of municipal problems and the interchange of ideas on city administration and legislation. The proceedings of the convention are printed in *Kansas Municipalities*, the monthly publication of the League, established December 1914. One hundred and thirty-eight Kansas cities and towns were members of the League in the year 1915-1916.

THE DEPARTMENT OF CHILD WELFARE.

The Department of Child Welfare undertakes to render service to the state in relation to certain definite matters as listed below.

1.—CHILD WELFARE CLUBS. The Department will coöperate with local communities in the formation of parent-teacher associations, mothers' clubs, and other such child-fostering organizations. A bulletin of suggestions may be obtained by writing to the Department.

2.—PLAY ACTIVITIES. The department is interested in the organization and promotion of municipal playgrounds, the establishment of neighborhood centers, and the equipment of the home with suitable play apparatus. Plans for the foregoing will be offered by correspondence.

3.—VACATION INDUSTRY. The department will offer a definite plan whereby a voluntary association of parents, or the municipality itself, may conduct classes for boys in such work as gardening and woodworking.

4.—CIVIC AND SOCIAL CENTERS. The department will assist in the organization of civic and social centers. A plan of procedure including suggestions as to leadership, literature, and a constitution for the proposed club will receive attention from the department.

5.—INDIVIDUAL ADVICE. The department offers individual advice to parents, and to those who wish to make preparation for child-welfare work.

**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

SECTION XII

**The Divisions of Athletics, Libraries, Museums, Publications,
State Service Work, University Surveys**

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

MR. ED. T. HACKNEY, *President*, Wellington..... Term expires 1917
MR. EDWARD W. HOCH, Marion..... Term expires 1919
MRS. J. M. LEWIS, Kinsley..... Term expires 1917
MR. LEE HARRISON, *Secretary*, Cherokee.

The Division of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.

THE UNIVERSITY DIVISIONS.

A University division is a body having relations with more than one of the schools or departments of the University. The divisions are administered by committees, subject to the general regulations of the Senate. Each division has an executive officer, called the Director.

The Summer Session and the Extension Division are treated in Sections X and XI, respectively.

ATHLETICS.

Director: WILLIAM O. HAMILTON, A. B.

Athletic Board: *Ex officio* members: Chancellor STRONG, Dr. NAISMITH; Senate representatives: C. L. BECKER, E. W. MURRAY, G. E. PUTNAM, H. A. RICE; student representatives: W. W. WOOD, F. S. RODKEY, J. A. REBER, J. W. GLEISSNER, L. R. MILLER.
Professor OLCOTT.
Mr. BOND.
Mr. MCCARTY.

The Division of Athletics, including intercollegiate and intramural sports, has its headquarters on the upper floor of Robinson Gymnasium, at the west end of the building. Here are located the offices of Prof. W. O. Hamilton, his coaches, and assistants. This division affords all men students the opportunity to take part in sports and athletics. The large well-lighted games room, 70 by 127 feet, is used for intercollegiate and intramural games. It is equipped with a regulation basket-ball court, 90 by 50 feet, with glass basket stops and two practice basket-ball courts, 60 by 45 feet; it has also a regulation tennis court. On the balcony is located the eighteen-lap running track, banked and cork covered. Special flooring is provided for use of indoor spikes for sprinting, jumping, hurdling, and pole vaulting. A hand-ball and boxing room on the east, and a padded wrestling room on the west adjoin the games room.

Outdoor facilities for carrying on the athletic work are provided at McCook Field. This field is well located with respect to both the University and the town of Lawrence, at the north edge of the campus. It provides three excellent turf-covered football fields, three baseball fields, nine tennis courts, and a one-fifth-mile cinder track. The stands will seat 1500, and are filled to capacity at the great Kansas-Missouri and Kansas-Nebraska football games. Training quarters with lockers, hot and cold showers, massage room, etc., are maintained. No fees are charged for use of these facilities.

SENATE REGULATION. The University Senate has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

THE ATHLETIC BOARD. All intercollegiate athletic contests are under the control of the University Athletic Board, composed of five students elected by the Athletic Association, four Faculty members appointed by

the University Senate, the Chancellor of the University, and the professor of physical education. The last two are *ex-officio* members.

RULES. The athletics of the University are required to conform to a certain standard of scholarship set by the University Senate, and also the rules of eligibility of the Missouri Valley Conference.

CONTROL. All forms of athletics are under the immediate control of the director of athletics and his assistants.

COACHES. All branches of athletics are under the direction of coaches who are also members of the Faculty.

THE ATHLETIC ASSOCIATION is organized to promote the athletics of the University of Kansas. Membership in the association is open to all students. The Chancellor is *ex officio* president of the association.

INTRAMURAL ATHLETICS. The general athletics of the University include football, baseball, basket ball, track, tennis, and soccer. Intramural contests are held in all branches.

INTERCOLLEGIATE GAMES. The University of Kansas is a member of the Missouri Valley Intercollegiate Athletic Association, and a full schedule of games in football, baseball, track, basket ball, and tennis is arranged with members of that association and other educational institutions.

MISSOURI VALLEY CONFERENCES. The University is a member of the Missouri Valley Conferences as follows:

1. The Missouri Valley Conference of Presidents and Governing Boards of Institutions, which has general control of athletics as affecting institutions in the conference.

2. The Missouri Valley Conference of Faculty Representatives, having control under the first conference of the details of athletics as affecting the institutions in the conferences, such as eligibility of participants, and so forth.

GENERAL PROVISIONS FOR RECREATION.

All students in the University are encouraged to avail themselves of some form of exercise.

The hand-ball, wrestling, and boxing rooms are available at all times. Basket-ball teams are formed each year.

The swimming pool is always open. It is reserved for the use of women students Mondays and Tuesdays throughout the year, and all are expected to learn to swim. The women's dressing rooms in the gymnasium are supplied with hair dryer, towels, and a woman attendant. In warm weather Potter lake may be used—an artificial lake about an eighth of a mile in circumference, located down the hill north of the gymnasium, within about three minutes walk from the building, and equipped with diving stand, springboard, float, a sanded wading-place, row boat, and dressing tents. Instructors for both men and women are provided.

The tennis courts on McCook Field are open to both men and women.

The Girls' athletic field, south of the gymnasium, is equipped with five tennis courts, a hockey field with concrete boundary, an archery field, and space for other games.

A baseball field adjoins McCook Field.

THE LIBRARIES.

Director: _____.

Division Committee: Chancellor STRONG, E. GALLOO, F. H. HODDER, W. L. BURDICK, A. S. OLIN, G. C. SHAAD, H. A. MILLIS, F. B. DAINS.

Librarian and Assistants.

CARRIE M. WATSON, A. B., Librarian.
 CLARA SCIOTO GILLHAM, A. B., Loan Desk Librarian.
 EDITH M. CLARKE, A. B., Cataloguer.
 DORA RENN BRYANT, Reference Librarian.
 MARY MAUD SMELSER, Accession Librarian.
 MARY AGNES COLLINS, A. B., Reference Librarian.
 FLAUDE EDDY JOHNSON, A. B., Reference Librarian.
 ETTA A. SMITH, Reference Librarian.
 SARAH EVELYN STANTON, A. B., School of Medicine Librarian.
 ETHEL MORROW, School of Law Librarian.
 ANNA DYKE LEARNARD, Ph. B., School of Engineering Librarian.
 GENEVIEVE DAHLENE, A. B., Biology Librarian.
 MARIE A. HEDRICK, A. B., Philosophy and Mathematics Librarian.
 MAUDE ISABEL SPENCER, Geology Librarian.
 ORETA ELIZABETH MOORE, A. B., Librarian's Clerk.
 OLIVE IRENE BROWN, A. B., Accession Assistant.

The libraries of the University contain 109,238 bound volumes and some 43,200 pamphlets, in addition to a considerable number of unbound serials and unclassified pamphlets. An annual appropriation of \$20,000 is devoted to the purchase of books. When opportunity permits, rare and unusual books are secured, but thus far the purchase has been regularly dictated by the needs of the various departments and schools of the University. As a result the library is primarily a working library for undergraduates. However, source material in the various departments of knowledge is constantly being added, so that the investigator may have ample facilities for carrying on original work.

The main collection is shelved in the stacks of Spooner Library, but to facilitate use by departments and schools, working collections have been placed in departmental reading rooms, of which seven are in the main library and eight are attached to their respective departments or schools.

A rough estimate of the number of special volumes at the command of these departments and schools follows:

| | |
|--|--------|
| Education (Spooner Library)..... | 3,214 |
| English (Spooner Library)..... | 11,421 |
| German (Spooner Library)..... | 4,323 |
| Latin (Spooner Library)..... | 2,115 |
| Greek (Spooner Library)..... | 2,751 |
| Romance Languages (Spooner Library)..... | 4,451 |
| History (Spooner Library, second floor)..... | 7,840 |
| Economics (Spooner Library, second floor)..... | 3,858 |
| Sociology (Spooner Library, second floor)..... | 2,800 |
| Biology (Snow Hall)..... | 3,988 |
| Chemistry (Chemistry Building)..... | 2,912 |
| Engineering (Marvin Hall)..... | 5,206 |
| Geology (Haworth Hall)..... | 2,237 |
| Law (Green Hall)..... | 8,590 |
| Mathematics (Administration Building)..... | 2,000 |
| Philosophy (Administration Building)..... | 2,700 |
| Physics (Blake Hall)..... | 1,056 |
| Medicine (Bell Memorial Hospital, Rosedale)..... | 5,406 |

Information in regard to the character of these collections will be found in the statements of their respective departments or schools. Each is in charge of an assistant librarian. The special periodicals pertaining to each are distributed among these libraries.

BOOKSTACKS. There are five stories in the stack room of the library, each eight feet high, so that all the books are within easy reach. The stacks and the flooring of these rooms are of steel. Books are classified and arranged on the shelves by the Dewey system.

CATALOG. The catalog of the library contains about 180,000 cards. The author and subject cards are arranged in one alphabet. The cards are arranged in cases in the general reading room.

THE GENERAL READING ROOM. The general reading room is a large, comfortable and well-equipped room, on the main floor of the library. In this room are about 1000 volumes of general reference books, cyclopedias, dictionaries, Poole's Index to Periodical Literature, and other books which are of special value for reference purposes.

PERIODICAL ROOM. The University provides in this room 1000 periodicals and publications of learned societies. The list is made as representative as possible of the important publications of America and Europe. The back numbers are kept on file for reference, and bound as rapidly as funds permit. The completion of the sets is now under way.

Through the courtesy of their editors, 393 Kansas newspapers are contributed to the periodical room.

LIBRARY REGULATIONS.

Spooner Library Building is open every day in the year, Sundays and holidays excepted. The general reading room is open from eight a. m. to ten p. m., when the University is in session, and during vacation from eight a. m. to six p. m. Hours for the departmental reading rooms vary with the departments, but all are open from eight a. m. to five p. m.

Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the librarian, and must be returned as soon as notice is received.

The privileges of the general reading room are open to citizens of Lawrence, and, in fact, to all Kansans; but books may be taken from the building only by members of the University.

MEMORIAL GIFTS.

Interest on the Kappa Alpha Theta memorial fund, in memory of May Sexton Agnew, is used for the purchase of books in English literature.

Two memorial gifts were received during the year 1914-'15. The professional library of the late Professor Henry C. Hill was given to the Law School by his father, Edward F. Hill, of Cape Elizabeth, Maine. By the wish of the late Dean F. O. Marvin, his professional library was given to the Engineering School. It has been appropriately shelved as a background for the bust of Dean Marvin by those alumni who presented the bust.

THE LAWRENCE PUBLIC LIBRARY.

The public library of Lawrence is open to students. This library contains 12,389 volumes, mainly of general literature and fiction, and 2250 public documents.

THE LIBRARIES IN TOPEKA.

The state library and the state historical library, both in Topeka, are easily accessible for the investigator.

THE MUSEUMS.

Director: FRANK STRONG, Ph. D.

Division Committee: _____.

Curators.

SAMUEL J. HUNTER, A. M., Curator of the Entomological Collections.
 ERASMUS HAWORTH, Ph. D., Curator of the Geological and Mineralogical Collections.
 WILLIAM C. STEVENS, M. S., Curator of the Herbarium.
 ALEXANDER M. WILCOX, Ph. D., Curator of the Classical Museum.
 BENNETT M. ALLEN, Ph. D., Curator of the Vertebrate Paleontological Collections.
 HANDEL T. MARTIN, Assistant Curator of the Vertebrate Paleontological Collections.
 CHARLES D. BUNKER, Assistant Curator of Mammals, Birds, and Fishes.
 RAYMOND BEAMER, A. B., Assistant Curator of Entomological Collections.

The scientific collections of the University are extensive and valuable. They were begun in 1872 by the late Dr. Francis H. Snow, and have been obtained chiefly by University exploring parties in western Kansas, Colorado, Wyoming, Arizona, New Mexico, Texas, Oregon, British America, Alaska, Greenland, and South America. These expeditions have been mainly under the direction of the late Dr. Francis H. Snow, Dr. Samuel W. Williston, Dr. C. E. McClung, Prof. Lewis L. Dyche, Prof. M. A. Barber, and Mr. Frank Agrelius. Twenty-six of these expeditions were conducted by the late Doctor Snow personally. By means of the material thus accumulated, a system of exchanges has been established with leading institutions and naturalists in all parts of the United States, so that the cabinets contain a very satisfactory representation of the fauna and flora, both recent and extinct, not only of the state of Kansas, but also of the whole of North America. The collections are nearly all housed in the Dyche Museum of Natural History.

ENTOMOLOGY.

Professor HUNTER.
Mr. BEAMER.

The foundation for these extensive collections is the Francis Huntington Snow collection, the result of numerous expeditions and frequent exchanges conducted by the late Doctor Snow. In the collections there are in all about 1000 types determined by leading specialists in the respective groups. The collections now comprise about 26,000 species and 300,000 specimens, representing all the different orders of insects.

The orders of Lepidoptera, Coleoptera, Diptera, Orthoptera and Hemiptera are especially well represented. In the Coleoptera there are over 10,000 species; the Melanopli in Orthoptera are fully represented; the collections of Coccidæ in Hemiptera affords an excellent series for study of North American forms. These collections are being augmented annually through the University Biological Survey, which is an intensive and consecutive systematic survey of all forms found within the state, their distribution, and biology. The collection, as a whole, is one of the largest connected with any educational institution in the United States.

The work in connection with the museum now affords opportunity for study throughout the entire year, in the summer months on the survey, and in the winter months on a continuation of the study of the material obtained throughout the summer. A series of monographs on Kansas forms has been prepared and others are in progress. It is expected that these will be brought together in uniform size and binding.

Specialists frequently visit these collections for recourse to the large representation of types, and such visitors are always welcome. In order to insure the preservation of "types" it has been deemed advisable to adopt the policy of retaining all "types" in the museum.

These collections are of further practical value to the people of the state in the determination of the injurious and beneficial insects and answers to numerous inquiries upon this subject.

The collections occupy a part of the second and third floors in the Dyche Museum of Natural History.

THE HERBARIUM.

Professor STEVENS.

The herbarium includes about 10,000 specimens, identified and labeled, of flowering plants, besides much material partly identified. The flora of Kansas and of the western Rocky Mountains is well represented. There is also a considerable amount of cryptogamic material, including sets of economic fungi of North America and of North American lichens. The herbarium is housed in Snow Hall.

THE CLASSICAL MUSEUM.

Professor WILCOX.

The classical museum contains full-sized plaster casts of the Hermes and Satyr of Praxiteles, the Venus of Melos, the Apollo Belvedere, the Diana of Versailles, the so-called Theseus of the Parthenon, three Metopes and twelve slabs of the north frieze and twenty of the east frieze of the Parthenon, the Varvakeion and Lenormant statuettes and the Strangford shield of the Athena Parthenos of Phidias, the Hegeso tombstone, the Orpheus relief, the Discobolos of Myron as restored by Furtwängler, the Laocoön, the Dying Gaul, the Borghese warrior, Demosthenes, Sophocles, Augustus in military dress, the so-called Germanicus, the Satyr and Mænad relief, twenty-one busts of Greek sculpture and Greek and Roman authors and emperors, two Tanagra figurines, and the Nike of Paionios inscription; also models of the Acropolis of Athens, the east pediment of the Zeus temple at Olympia, the Victories of Paionios and Samothrace, and the columns of the temple of Castor in the Forum at Rome; and relief maps of Athens and Rome.

It has facsimile reproductions of the two Vaphio gold cups, the so-called Nestor's cup, the lion-hunt sacrificial knife, a gold mask, a diadem, and a series of smaller gold objects found in Mycenæan graves; 50 original Greek and Roman coins; a good-sized collection of specimens of building-stones used in Roman structures, inscriptions, vases, lamps, cinerary urns, locks and keys, articles of dress, and specimens of Roman glass.

The collections embrace further:

Laloux's restorations of Olympia, Defrasse's restorations of Epidaurus, Pontremoli's restoration of Pergamon, and Weichardt's restorations of Pompeii.

Stuart and Revett's *Antiquities of Athens*, 363 plates; Penrose's *Athenian Architecture*, 47 plates; Inwood's *Erechtheum*, 39 plates; Bohn's *Propylæa*, 21 plates; Ross, Schaubert and Hansen's *Athena Nike Temple*, 13 plates; Michaeli's *Parthenon*, 15 plates; Cockerell's *Temples of Ægina and Bassæ*, 37 plates; Koldewey and Puchstein's *Temples of Lower Italy and Sicily*, 29 plates; Major's *Temples of Pæstum*, 25 plates; Adler's *Mausoleum*, 5 plates; Le Roy's *Ruins of the most beautiful monuments of Greece*, 60 plates; Fenger's eight colored plates of Doric architecture; the plates of the final reports of the excavation at Olympia, Pergamum, Assos, and Delphi, as far as they have yet been published; Piranesi's large engravings of the columns of Trajan and Marcus Aurelius; twelve photographs of architectural models in the Metropolitan Museum, New York.

A complete set (640 so far) of Brunn's plates of Greek and Roman sculpture; 55 Braun photographs of the Elgin marbles; 139 plates of the Sabouroff collection of sculpture, terra-cottas, vases, and bronzes; Furtwängler's ancient gems, 67 plates; 82 plates of the silver vases and utensils found at Hildesheim and Boscoreale; 6 colored plates of Odyssey paintings found in Rome; Dodwell's 30 views of Greece, in color; Lau's and Genick's 84 colored plates of Greek vases; 27 colored plates of Greek vases in the British Museum; Furtwängler and Loeschke's *Myocenæan vases*, 49 plates; Harrison and MacColl's *Greek vases*, 43 plates; Furtwängler and Reichhold's large plates of Greek vases, as far as they have been published, 140; 11 colored plates of Greek and Etruscan terra-cotta sarcophagi in the British museum; Hermann's reproductions of antique paintings (136 so far); Preller's four cartoons of wall-paintings of ancient Greek landscapes in the Albertinum at Dresden; 150 plates of *Monumenti Inediti* and *Antike Denkmæler* vases, sculpture, and architecture; 650 photographs illustrating Roman topography and life.

A facsimile of the whole of the Bacchylides manuscript; 36 plates of other Greek manuscripts; 25 facsimiles of Biblical manuscripts in the British Museum; 30 facsimiles of the Flinders Petrie Egyptian Greek papyri; 62 plates of Latin manuscripts; Roehl's collection of oldest Greek manuscripts, many of them in facsimile.

Baumeister's monuments of classical antiquity, 95 plates and 2400

illustrations; 2500 stereopticon slides of Greek and Roman views, portraits, buildings, statues, paintings, vases, and manuscripts.

The classical museum is located in Fraser Hall, south wing, second floor.

The collections are constantly being enlarged, and are always open to students and visitors for inspection and study.

VERTEBRATE PALEONTOLOGY.

Professor ALLEN.
Mr. MARTIN.

The museum of vertebrate paleontology furnishes not only materials ordinarily lacking for the rounding out of the education of the general student, but offers excellent facilities for research work in the anatomy and phylogeny of extinct vertebrate life. The collections from the rich Kansas fields are especially complete, and the museum includes also representatives from all of the principal geological formations. The collections are distributed about as follows:

Tertiary, 200 genera, 700 species.

Cretaceous, 60 genera, 200 species.

Jurassic, 10 genera, 30 species.

Triassic, 25 genera, 75 species.

Permocarboniferous, 20 genera, 100 species.

From the Tertiary of Kansas, Wyoming, South Dakota, Oregon, and Colorado nearly all of the known genera are represented. Of the Cretaceous animals there are hundreds of specimens, including not a few of exceptional perfection and completeness. There is a very good collection from the John Day region, Oregon, and one of the three collections of Patagonian specimens in the country. The collection of reptiles and birds is particularly valuable.

ZOOLOGICAL COLLECTIONS.

Professor ALLEN.

A representative collection of marine invertebrates from the Atlantic and Pacific coasts and from Bermuda provides material for study and investigation. Very large additions to these collections were made by recent expeditions to Puget Sound.

In the conchological cabinet are included nearly 1000 species of shells, from all parts of the world.

PALEOBOTANY.

Mr. MARTIN.

The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms. The collection is placed with that of paleontology. The purchase of a number of cases has made it possible to put on exhibition many more specimens than have been before open for public inspection.

COLLECTION OF MAMMALS, BIRDS, AND FISHES.

Mr. BUNKER.

The collection of large mammals indigenous to the North American continent is very complete. The specimens include the more common and well-known animals of the United States, an excellent representation of the animals of the Atlantic coast as far north as Cape Sabine, and from the continent of Greenland; also a series from the Pacific coast as far

north as the Aleutian islands and from the interior of Alaska. This large collection is being placed on exhibition on the second floor of the Dyche Museum of Natural History. The large panorama showing many groups of North American mammals has been brought almost to completion by Mr. Bunker and Mr. Rocklund, and descriptive pictures and labels afford a ready explanation of the exhibit. The collection occupies the entire first floor, which is known as "Mammal Hall." Besides the mounted specimens, there are 1300 mammal skulls and 1500 skins. New material is being added constantly, and mounted for study and exhibition.

The ornithological collections, which are carefully protected in moth-proof cases, have been increased in the last few years from 4000 to 10,000 specimens, of which 2300 are mounted. There are about 900 species represented. During the last year a complete systematic catalog has been prepared, and an entire rearrangement of the collections is in progress. Many of these are unmounted skins, furnishing ample material for laboratory study when fresh specimens can not be readily obtained. There is also a fine series of skeletons, representing species in size from the shrews and bats to elephants and whales.

PUBLICATIONS.

Director: FRANK H. HODDER, Ph. M.

Division Committee: F. E. KESTER, P. F. WALKER, F. R. HAMILTON, G. O. FOSTER, M. THORPE, H. A. MILLIS, R. M. OGDEN.

THE UNIVERSITY OF KANSAS SCIENCE BULLETIN is maintained by the University as a medium for the publication of the results of original research by members of the University. Papers are published in it only on recommendation of the Committee of Publication, which committee is composed of five members of the scientific Faculty. Individual papers, accepted by the committee for publication, are printed and issued as separates. When a sufficient number of papers have been published, they are bound together and issued as single volumes for purposes of exchange with other journals. Two or three volumes are issued in each academic year. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication.

UNIVERSITY OF KANSAS STUDIES, HUMANISTIC SERIES, is a series devoted to the presentation of the results of research along humanistic lines. The numbers are issued at irregular intervals. Each number is a complete monograph, and its price varies with its size and cost of publication.

THE UNIVERSITY GEOLOGICAL SURVEY BULLETINS are issued from time to time as material for them is gathered.

THE UNIVERSITY ENTOMOLOGICAL BULLETINS are reports issued in regular series from time to time, comprising the results of entomological investigations conducted by the University. These deal in part with applied problems of practical value referred to the University by various interests of the state, and in part with fundamental research problems presented by such investigations. These publications will be sent free to any citizen of the state upon application.

THE BULLETIN OF THE ENGINEERING EXPERIMENT STATION is the medium through which the results of investigations in engineering lines are published. Numbers are issued at irregular intervals, as material becomes available, usually two or three each year. It is under the direction of an Experiment Station staff.

Communications should be addressed to the Director.

STATE SERVICE WORK.

Director: _____.
Division Committee: _____.

ENTOMOLOGICAL FIELD WORK.

Professor HUNTER.

From 1872 to 1907 the University conducted an entomological investigation throughout the state. This investigation was directed, in part, to problems referred to the University for solution by various interests of the state, and, in part, to fundamental research problems presented by such investigations.

In 1907 the legislature created the State Entomological Commission. The character and scope of the work of this Commission is defined in the following sections of the law:

"SEC. 2. That this State Entomological Commission shall consist of the secretary of the State Board of Agriculture, secretary of the Kansas State Horticultural Society, and the professor of entomology of the University of Kansas, and the professor of entomology at the State Agricultural College, and the fifth member to be a nurseryman actively engaged in the nursery business within the state of Kansas, to be appointed by the governor, whose term of office shall be two years. The secretary of the State Board of Agriculture shall be chairman of this Commission and the commissioners' secretary shall be the secretary of the State Horticultural Society.

"SEC. 4. That it shall be the duty of said state entomologists, under the control of the State Entomological Commission, to seek out and suppress pernicious insect pests and injurious and contagious plant diseases hereinbefore mentioned as destructive to the horticultural and agricultural interests of this state, and conduct experiments when necessary to accomplish that end."

Accordingly, for expediency in the conduct of its field work, the Entomological Commission has assigned the southern half of the state to the state entomologist at the University of Kansas, Lawrence, and the northern half to the state entomologist at the Agricultural College, Manhattan. Inquiries from the southern half of the state should, therefore, be directed to the University of Kansas; inquiries from the northern half to the Kansas Agricultural College.

WATER ANALYSIS.

Assistant Professor YOUNG.

The legislatures of 1907 and 1909 passed laws giving to the State Board of Health a large degree of control over all public water supplies and sewerage systems of the state, and charging this board with the preservation of the purity of the waters of the state, for the protection of the public health. The legislature of 1915 passed a law giving the State Board of Health power to make rules and regulations for the collection of samples and analysis of water furnished to the public for domestic consumption by municipalities, corporations, common carriers, or individuals, and located the water laboratory at the University. The secretary of the State Board of Health, the state sanitary engineer and his assistants, the director of the water laboratory and his assistants, constitute the division of water and sewage of the State Board of Health.

CERAMICS AND KANSAS CLAYS.

Professor HAWORTH.
Mr. TEETER.

The University has entered upon the work of investigating Kansas clays. Coöperating with the Geological Survey, the Department of Mining Engineering will analyze and test all Kansas clays both for their artistic and for their practical value.

CERAMICS. The Department of Fine Arts provides a thorough course in design for those wishing to undertake the artistic treatment of clays. It is now equipped for the production of both pottery and tiles, but thus far the work has been largely in pottery, both artistic and useful.

The clays found near Ellsworth and Hoisington are so far the best. They fire well, producing soft artistic colors and promising many possibilities in glazing.

CLAYS FOR BRICK AND BUILDING TILE. The investigation of clays suitable for brick and building tile is also proceeding satisfactorily.

STATE CHEMICAL RESEARCH.

Associate Professor WHITAKER.

Included in the Department of Chemistry is the Division of State Chemical Research, which has for its object the study of those problems of Kansas, municipal or industrial, which may lend themselves to chemical investigation. In addition to its own problems, this division coöperates with other University activities which are engaged in state service work. The following investigations are now being conducted:

The Composition of Kansas Natural Gas. Ernest E. Lyder, M. S.

The Softening of Municipal Water Supplies. James W. Schwab, B. S.

Comparative Methods for the Disposal of Sewage. Francis M. Veatch, B. S., and Harry P. Evans, A. B.

The Recovery of Zinc Wastes by Flotation. George Belchic, M. S., R. O. Neal, S. F. Farley, H. L. Van Velzer.

ANALYSIS OF FOOD AND DRUGS.

Professor BAILEY, Chemist.
Professor SAYRE, Pharmacist.

The legislature in 1905 passed a bill making it the duty of the chemistry departments of the University and the State Agricultural College, under the direction of the State Board of Health, to make analyses of samples of foods and beverages collected by any county or city board of health of the state of Kansas, and to make reports upon the same. In conformity with this law, the chemistry department of the University in 1906 examined a large number of food products, and the reports of these analyses were published in the monthly *Bulletins* of the State Board of Health.

The Kansas food and drugs act of February 14, 1907, requires analyses of food products to be made by the chemistry departments of the University and the Agricultural College, analyses of drugs to be made by the pharmacy department of the University. These analyses are made upon samples of foods and drugs collected by the special food and drug inspectors appointed by the State Board of Health. A special laboratory has been fitted up for the analysis of drugs and another for the analysis of foods. These laboratories are completely furnished with the necessary materials, and a sufficient number of assistants are employed to carry on the work expeditiously.

The chemists in these laboratories not only make examinations of the samples that are sent in by the official inspectors, but they devote considerable time to a study of the condition of the market, to see if adulteration exists.

WEIGHTS AND MEASURES.

Assistant Professor STIMPSON.

In 1868 the state law designated the Chancellor *ex officio* state sealer of weights and measures. The University has in its custody complete sets of the different standards of weight and measure, together with the necessary equipment of balances and other apparatus to make them available for use. These standards are of high accuracy and are certified by the United States government through the National Bureau of Standards, and are by law the authorized public standards of the state.

A deputy state sealer, who is a member of the Faculty, gives a large part of his time to this work. He compares and adjusts, free of charge, all county, municipal, and other official standard weights and measures. He will also compare and adjust weights and measures for business houses, institutions, and others who may desire such comparisons made. For this work a small fee, which is set by law, is charged.

ENGINEERING EXPERIMENT STATION.

FRANK STRONG, Ph. D., Chancellor of the University.
 P. F. WALKER, M. M. E., Director, Mechanical Engineering.
 GEO. C. SHAAD, E. E., Electrical Engineering.
 H. A. RICE, C. E., Mechanics and Civil Engineering.
 GOLDWIN GOLDSMITH, Ph. B., Architectural Engineering.
 C. A. TERRELL, M. S., Mining Engineering.
 W. A. WHITAKER, M. A., Chemical Engineering.

ORGANIZATION AND PURPOSE.

Engineering experiment stations have been organized in several of the technical schools in the United States, their purposes, in the main, being as follows: to correlate and systematically group together the results of scientific investigations as they are conducted under the various departments of the schools; to plan, organize, and direct additional work to be carried out by the departments of the school along lines which will be of practical benefit to engineers in general and to the state or the locality in which the school is situated in particular; to act in stimulating and elevating the engineering education given by the school; and to arrange for the publication and distribution of the results of engineering and industrial research work. The University of Kansas organized such a station in 1908, with the Dean of the School of Engineering as Director and the balance of the staff made up of the Chancellor of the University and the heads of the various engineering departments. The personnel of the present staff is given above. Up to the present time the financial support of the University of Kansas Engineering Experiment Station has been through the appropriations granted to the various departments of the Engineering School, and the work of investigation has been carried on by men regularly appointed to the instructional staff, but relieved of teaching duties to some extent in order to give time for special investigations.

ENGINEERING BULLETINS.

The publication of bulletins is provided for through the regular University channels for issuing publications. Up to the present time the following bulletins have been published:

BULLETIN No. 1. NOVEMBER, 1909.

A Ballistic Electrodynamometer Method of Measuring Hysteresis Loss in Iron. *Martin E. Rice* and *Burton McCollum*.

Voltage Regulation of Alternators. *Burton McCollum*.

BULLETIN No. 2. JULY, 1912.

Natural Gas: Its Properties, Its Domestic Use, and Its Measurement by Meters. *P. F. Walker*.

BULLETIN No. 3. JANUARY, 1913.

Kansas Fuels: Coal, Oil, and Gas. Heating Values and Proximate Analysis of Coal. *P. F. Walker* and *Walter Bohnstengel*.

Discussion of Sulphur Content of Bituminous Coal. *Walter Bohnstengel*.

BULLETIN No. 4. OCTOBER, 1913.

The Organization and Work of the Engineering Experiment Station. *G. C. Shaad*. Vocational Education in Kansas. *P. F. Walker*.

BULLETIN No. 5.

The Ground Water Supplies of Kansas. *C. A. Haskins* and *C. C. Young*.

BULLETIN No. 6. (Partial reprint of No. 3.)

Kansas Fuels: Coal, Oil, and Gas. *P. F. Walker* and *Walter Bohnstengel*.

Economic Effects of Washing Coal from the Kansas State Mine. *C. M. Young*.

Others now in press and soon to be ready for distribution are:

BULLETIN No. 7.

The Removal of Iron from Municipal Water Supplies. *J. W. Schwab*.

The Measurement of Electrical Energy, Electricity Meters, Rates for Electrical Energy. *Geo. C. Shaad* and *C. A. Johnson*.

Subjects on which investigations are in progress are as follow:

- The adaptability of Kansas rock to road building.
- A study and classification of the different commercial bituminous paving materials.
- Methods of waterproofing cement mortars and concrete.
- General survey of concrete aggregate, sand and stone, of the state.
- Investigation as to time of removal of forms from concrete.
- The effect of temperature on the time of setting of concrete.
- An investigation of the highway bridges of the state, and improvements in design.
- The effect of repeated stresses on concrete.
- Investigation of stresses in railroad track.
- Study of railroad track drainage.
- Investigation of paving brick of Kansas.
- Results of analyses of the surface waters of Kansas.
- Investigation of methods of sewage disposal suited to conditions in Kansas.
- The relation of water supplies, water purification, sewerage, and sewage disposal to the public health of Kansas cities.
- The relation of air supplies to public health problems.
- The purification of water used in swimming pools.
- An investigation of the suitability of the sands of Kansas as filter media in water purification.
- The supply of electricity for lighting and power in small cities.
- The fixing of fair rates for electricity when furnished by small plants.
- Data covering "white way" lighting systems as such systems are adapted to Kansas cities.
- An investigation of the starting of synchronous motors and the operating characteristics of such motors.
- Investigation of losses in automobile transmission gears.
- The burning of low-grade fuel in boiler furnaces.
- Effects of moisture injected into the cylinders of gasoline engines.
- The properties of lubricating oils.
- Survey of Kansas coals with regard to improvement by washing.
- Efficient concentration of lead-zinc ores.
- School buildings, grade and high schools, with particular reference to fireproofing, lighting, ventilation and sanitation.
- Courthouses and other county and municipal buildings.
- The preparation of standard building laws suitable for communities of different sizes.

STATE SURVEYS.

Director: FRANK STRONG, Ph. D.

Division Committee: _____.

BIOLOGICAL SURVEY.

Professor STEVENS, Botanist.
 Professor HUNTER, Entomologist.
 Professor ALLEN, Zoölogist.

Each summer the departments of botany, zoölogy, and entomology send out observation parties to study the forms of life constituting their respective fields. These parties are composed of biologists and advanced students of biology, mainly from the University of Kansas. The records of their observations are issued in separate reports and in the science bulletins of the University. By means of the collections made it is hoped to secure for the museums a complete representation of the animal and plant life of the state.

GEOLOGICAL SURVEY.

Professor TWENHOFEL, State Geologist.
Professor BAILEY, Ph. D., Chemist.

The University Geological Survey of Kansas was organized by the Board of Regents of the University in 1894, under the general authority given them by law, and was given especial sanction and authority by legislative enactment from 1897 to 1907, when the present law was passed. The object is to accomplish a geological survey of the state as rapidly as possible, giving a complete exposition of its geological and mineralogical resources, including all subjects of economic and scientific importance.

By provision of law the Chancellor of the University is *ex officio* director of the survey and the head of the Department of Geology and Mining is superintendent and state geologist. It is contemplated that the work will be done principally by members of the University Faculty and advanced students, so that the cost to the state will be a minimum. The results already obtained have been of great value to the state, especially in the development of coal, oil, gas, Portland cement, gypsum and its products, and clay manufactories.

The stratigraphy of the east third of the state has been worked out in great detail, and also the fauna and flora of the area have been studied, to such an extent, indeed, that geologists of adjoining states now recognize our stratigraphic and paleontologic studies as being the most nearly complete of any within the great Mississippi valley area.

Work was begun on the survey in 1893 and has been carried forward steadily ever since. Throughout this time from five to twelve assistants have been doing field work during every summer vacation. The laboratory work and the writing of reports have been done principally throughout the remaining nine months of the year. The subjects thus far studied and reported upon are given in the following list of publications. Other subjects have been studied to a great extent, but not yet sufficiently for the completion of a report.

PUBLICATIONS OF THE STATE GEOLOGICAL SURVEY.

The survey has already published the following reports, all of which are for free distribution, the recipient paying transportation charges. (Those marked with a star are out of print.)

Volume I, 1896.—Reconnaissance Report on General Stratigraphy of Eastern Kansas.*

Volume II, 1897.—General Geology of Western Kansas.*

Volume III, 1898.—Special Report on Coal. 28 cents.

Volume IV, 1898.—On Upper Cretaceous Paleontology.*

Volume V, 1899.—Special Report on Gypsum and Gypsum Cement Plasters. 16 cents.

Volume VI, 1900.—Carboniferous Invertebrates and Cretaceous Fishes. 28 cents.

Volume VII, 1902.—Mineral Waters. 20 cents.

Volume VIII, 1906.—Special Report on Lead and Zinc. 28 cents.

Volume IX, 1909.—Special Report on Oil and Gas. 32 cents.

Volume X, 1910.—A Special Report on Mine Explosions, in preparation.

Report on Mineral Resources of Kansas for 1897. 4 cents.

Report on Mineral Resources of Kansas for 1898.*

Report on Mineral Resources of Kansas for 1899. 4 cents.

Report on Mineral Resources of Kansas for 1900, 1901. 5 cents.

Report on Mineral Resources of Kansas for 1902.*

Report on Mineral Resources of Kansas for 1903. 3 cents.

Bulletin I.—Well Waters of Kansas for 1913. 6 cents.

Since the parcel-post law became effective the postal rates for near-by destinations are materially reduced from the above figures, but no definite figures can be quoted, as the rates vary with distances.

Volume I is devoted entirely to reconnaissance work in stratigraphy and a preliminary description of the general geology of eastern Kansas, with a short description of the oil and gas fields of the state and a preliminary catalog of invertebrate fossils found in the Carboniferous age.

Volume II is a similar description of the stratigraphy and other features of general geology of western Kansas, being a companion to volume I. It has a short chapter on some phases of vertebrate paleontology.

Volume III is a special report on coal, giving a general account of the stratigraphy of eastern Kansas, the most extensive yet published, and a detailed account of the coal-bearing strata of the state, methods of mining, the chemical and physical properties of Kansas coal, and other subjects of a like nature.

Volume IV is devoted entirely to the paleontology of the Upper Cretaceous. It is profusely illustrated with plates and cuts of vertebrate fossils from western Kansas.

Volume V is a special report on gypsum and gypsum cement plasters, giving the results of about three years' investigation. This is probably the best account yet published on this interesting product.

Volume VI is the second volume on paleontology. It deals with Carboniferous invertebrates and Cretaceous fishes.

Volume VII is devoted to the mineral waters of the state, and gives a description not only of the mineral waters of Kansas, but of mineral waters in general.

Volume VIII is a special report on lead and zinc.

Volume IX is a special report on oil and gas, with many maps and geologic sections and a lithographic geologic map of the state.

Volume X is a special report on coal-mine explosions, giving a history and tabulation of all recorded mine explosions of the world, and their causes, when known, followed by extensive study of mine gases, coal dust, modes of ignition and other causes leading to mine explosions and mine fires, with suggestions and recommendations for prevention of the same. Ready soon.

Bulletin I is devoted to a discussion of well waters of the state. It is written in a plain, every-day style, for the layman rather than for the scientist. It describes briefly where water may be had by digging, and where it is useless to dig wells.

The series of annual reports began with a report on the mineral productions of the state for 1897 and was continued to 1903. The reports for 1900 and 1901 were issued jointly. Largely they are repetitions of the same subjects, as each of them contains a complete summary of the total state production to date. They cover the subjects of gold, silver, lead and zinc, coal, oil, gas, clay products, gypsum, hydraulic and Portland cements, building stone, and salt.

The report for the year 1902 was delayed in publication and thereby admitted a short report on the extraordinary flood of the Kansas river in May and June, 1903. The report for 1898 contains an extended description of Kansas salt as a special article, and similarly the report for 1902 has a specially prepared chapter on Portland cement.

Since the year 1910 work has been confined principally to the completion of a stratigraphic and paleontologic survey of the Permian of Kansas, and to an exhaustive study of the clays of the state. Neither of these studies is yet completed. The legislature of 1911 made a special appropriation for the erection and equipment of a clay-testing laboratory. Since its completion the survey is prepared to test all clays of the state by all the methods known to science and the arts. It is proposed to prosecute the work of testing Kansas clays as rapidly as possible, and to issue reports on results obtained from time to time as the work progresses. The first clay bulletin will be on the Dakota Clays of Kansas, and will appear during 1916.



**THE
UNIVERSITY OF KANSAS**

ANNUAL CATALOG

1915-1916

**SECTION XIII
DEGREES CONFERRED, ETC.**

UNIVERSITY CALENDAR.

Academic Year, 1915-'16.

January 1, Saturday—Close of Christmas recess.
January 24 to 28, Monday to Friday, inclusive—Semester examinations.
January 31, Monday—Beginning of second semester; enrollment in classes.
February 1, Tuesday—Beginning of class work in all departments.
February 22, Tuesday, Washington's birthday—Legal holiday.
April 3, Monday—Beginning of second half-semester.
April 21 to 24, Friday to Monday—Easter recess.
May 29 to June 2, Monday to Friday, inclusive—Semester examinations.
May 30, Tuesday, Decoration Day—Legal holiday.
June 4, Sunday, 8 p. m.—Baccalaureate sermon.
June 5, Monday, 3:30 p. m.—Commencement concert.
June 6, Tuesday, 10:30 a. m.—Alumni address.
June 6, Tuesday, 8 p. m.—Chancellor's reception.
June 7, Wednesday, 10 a. m.—Commencement exercises.
June 8, Thursday—Beginning of Summer Session.

Academic Year, 1916-'17.

September 11, 12, 13—Entrance examinations and registration.
September 12, 13, Tuesday, Wednesday—Enrollment in classes.
September 14—Beginning of class work in all departments.
September 15, Friday—General assembly and annual address, at 10 a. m.
November 20, Monday—Beginning of second half-semester.
November 30 to December 2, Thursday to Saturday—Thanksgiving recess, beginning Wednesday noon.
CHRISTMAS RECESS—Saturday, December 16, to Monday, January 1, inclusive.
January 22 to 26, Monday to Friday, inclusive—Semester examinations.
January 29, Monday—Beginning of second semester; enrollment in classes.
January 30, Tuesday—Beginning of class work in all departments.
February 22, Thursday, Washington's birthday—Legal holiday.
April 2, Monday—Beginning of second half-semester.
April 6 to 9, Friday to Monday—Easter recess.
May 28 to June 1, Monday to Friday, inclusive—Semester examinations.
May 30, Wednesday, Decoration Day—Legal holiday.
June 3, Sunday, 8 p. m.—Baccalaureate sermon.
June 4, Monday, 3:30 p. m.—Commencement concert.
June 5, Tuesday, 10:30 a. m.—Alumni address.
June 5, Tuesday, 8 p. m.—Chancellor's reception.
June 6, Wednesday, 10 a. m.—Commencement exercises.
June 7, Thursday—Beginning of Summer Session.

**STATE BOARD OF ADMINISTRATION OF
EDUCATIONAL INSTITUTIONS.**

| | |
|--|-------------------|
| MR. ED. T. HACKNEY, <i>President,</i> Wellington..... | Term expires 1917 |
| MR. EDWARD W. HOCH, Marion..... | Term expires 1919 |
| MRS. J. M. LEWIS, Kinsley..... | Term expires 1917 |
| MR. LEE HARRISON, <i>Secretary,</i> Cherokee. | |

DEGREES CONFERRED.

June, 1916.

DOCTOR OF PHILOSOPHY.

Stanton Olinger, Lawrence.

MASTER OF ARTS.

Clifford Ashton Altman,* Lawrence.
James Christian Anderson,* Greenleaf.
Pearl May Baker, *Henryetta, Okla.*
Willis Herbert Carothers, Emporia.
Edward Everett Colyer,* Hays.
Elmer LeRoy Craik, McPherson.
Erle Fletcher Cress, *Perry, Okla.*
Alvin Pender Cummins,* Winfield.
Kate Daum, Lawrence.
Elsie Dershem, Baldwin.
Ellen Jane Eaton, Highland.
Eunice Mildred Eppard, Lawrence.
Lydia Constantia Esping, Lindsborg.
Herbert Flint,* Girard.
James Ralph Foster, Lawrence.
Ruby Olive Foulk, Lawrence.
Violetta Belle Garrett,* Nickerson.
Cora Hazel Gault, Wellington.
Andrew A. Granstedt, Scandia.
Paul Witmore Harnly, McPherson.
Gertrude Theoren Hazen,* Baldwin.
Edna Lucile Hetzel, Waverly.
Mamie Alberta Higgs, Hartford.
Annie P. Hopkins, Ellsworth.
Victor Hugo Housholder, Columbus.
Jessie Marie Jacobs, McPherson.
Alice Elizabeth Johnson,* Holton.
Carl Luther Johnson,* Topeka.
Ethel Ann Jones, Chanute.
Arthur Remington Kellogg, Lawrence.
Bertha Kitchell, Topeka.
Edward Daniel Kroesch, Ottawa.

Karl Adalbert Krueger,† Atchison.
Lester Daniel Lacy, Lawrence.
Floyd Brown Lee, Hays.
Edgar Fauver Long, McPherson.
Winifred Helena Luther, Lawrence.
James Claude Malin, Lewis.
Helen Griffin Metcalf, Lawrence.
Hazel Michaels, Scranton.
Mark Egbert Moore,* Leavenworth.
Grace McCrone, *Camden Point, Mo.*
Cyril Arthur Nelson, Troy.
Earl Cleveland O'Roke, Lawrence.
Fred W. Poos, jr., Potter.
Dudley James Pratt, Rossville.
Will A. Ransom, Derby.
Irene Raymond,* *Liberty, Mo.*
Elmer Ellsworth Rush,* *Kansas City, Mo.*
Anna Elizabeth Savage, Lawrence.
Harvey Clarence Seal,* Meriden.
Clarence Smith, Sedan.
Ephraim Joseph Sorensen, McPherson.
DeForest Clement Steele, McPherson.
Wilbur Willis Swingle, Lawrence.
Leo Glenn Swogger, Edgerton.
Eva L. Trimble Sterling.
John Wesley Twente, Baxter Springs.
Tillman Herbert Vaughan, Winfield.
Mabel Olive Watkins, Lawrence.
Vera Weatherhogg, *Kansas City, Mo.*
James Lisle Williams, Chetopa.
Mabel Faye Woods, Burden.
Carrie I. Woolsey,* Lawrence.

MASTER OF SCIENCE.

Homer Raymond Blincoe, Columbus.
William Albert Jones, Hoisington.
William H. Severns,* Lawrence.

Fred Lowe Soper, Hutchinson.
Vivian Susanne Strahm, Lawrence.

CIVIL ENGINEER.

Roy Albert Porterfield, Holton.

Luther Rudolph Tillotson, Topeka.

ELECTRICAL ENGINEER.

George Rockwell Albers, *Miami, Ariz.*

BACHELOR OF ARTS.

Frank Carlyle Ackers,* Abilene.
Howard Adams, Maple Hill.
William Ainsworth, Lyons.
Watie Murrell Albert,* *Westville, Okla.*
Lewis George Allen,* Lenexa.
William Orland Lytle, Lawrence.
Florence May Alsop,* Wakefield.
Forrest Nelson Anderson, Lawrence.
Elmer Rudolph Arndt, Lawrence.
Madeline Ashton,* Lawrence.
Amelia Gregg Babcock, Lawrence.
Gerhard Baerg, Hillsboro.
Wilbur Arthur Baker,* Holton.

Ward Seymour Henry Barber, Abilene.
Nellie Barnes, Gardner.
Ethel Pauline Bartberger, Merriam.
Charlotte Alice Bierbower, *Braman, Okla.*
Adele Johanne Bischoff, Washington.
Mary Caecilia Bordenkircher, Burlington.
Russell Starkey Bracewell, Kincaid.
Alice Lenore Brown, Lawrence.
Hattie Beach Brown,* Lawrence.
James Clarke Bruington, Dodge City.
Odis Herschel Burns, Pittsburg.
James Abram Butin, Fredonia.
William Sheldon Cady, Fredonia.

* Assigned to Class of 1915.

† Assigned to Class of 1914.

BACHELOR OF ARTS—continued.

Merritt Virginia Carr, Leavenworth.
 Eva Edith Chadwick, Bonner Springs.
 Zula Chase, Hutchinson.
 Alice Coors, *Las Vegas, N. Mex.*
 Marguerite Cornforth, Lawrence.
 Luella Cory, Lansing.
 Chester Claude Covey, Baxter Springs.
 Agnes Telfer Crawford, Girard.
 Alexander Edwin Creighton, Washington.
 Beulah Louise Cress, Clements.
 Amy Stark Cruzan, Lawrence.
 Lewis Allison Curry, Dunavan.
 Clara-Gene Dains, Lawrence.
 Beulah Davis, Hutchinson.
 Bryan Llewellyn Davis, Lawrence.
 Margaret Rogers Davis,* Lawrence.
 Fred Samuel Degán, *Kansas City, Mo.*
 Henry William Dixon,† *Kansas City.*
 W. Hector Dodds, Sterling.
 Charles Orville Doub, Augusta.
 Jonathan Mahaffie Dow, Lawrence.
 Elfrieda Draper, Lawrence.
 Ray Allen Dummire,* Lawrence.
 Ruth Ophelia Dyche, Lawrence.
 Oren Douglas Eaton, Lawrence.
 Wayne Steele Edwards, Chapman.
 Altina Jane Elliott, Lawrence.
 John David Elliott, Holliday.
 Ralph Ellis, Lawrence.
 Lawrence Power Engel, Lawrence.
 Ruth Edith Ewing, Parsons.
 Alma Marjorie Freienmuth, Tonganoxie.
 Frederick William Giesel,* Spearville.
 Helen Louise Gephart, Lawrence.
 Anna Lee Gill, Lawrence.
 Isabel Elizabeth Gilmore, Lawrence.
 John Gleissner, Abilene.
 Virgil Mae Gordon, Fort Scott.
 Mary Elizabeth Gossard, Oswego.
 Archie Verne Grady, Lawrence.
 Helen Greer, Lawrence.
 Wheeler Russell Gregory,* *Kansas City, Mo.*
 Cecil Ellen Grimes, Wichita.
 Florence Evelyn Hale, Lawrence.
 Zetha Hammer, *Salt Lake City, Utah.*
 George Bancroft Harrell,* Barnard.
 Ella Avonia Hawkins, Lincoln.
 Gladys Margaret Henry, Lawrence.
 Allen Murray Herron, Wellington.
 Helen Louise Hershsberger, Wichita.
 Lucile Hildinger, Lawrence.
 Minnie Anna Himpel, Tonganoxie.
 Corda Lea Hoadley, Fort Scott.
 Harry William Hoffmann, Lawrence.
 Louise Marjorie Hopkins, Ellsworth.
 Ruth Horton, Iola.
 Vanetta Hosford, Lawrence.
 Victor Hugo Householder, Columbus.
 Bessie Maree Huff, *Muskogee, Okla.*
 Robert Hurd, Wichita.
 Hazel Magaline Hurst, Wichita.
 Helen Hurst, *Kansas City, Mo.*
 Avis Louise Imus, *St. Joseph, Mo.*
 Norma Janet Jamieson, Burlingame.
 Josephine Jaqua, St. Francis.
 Matie Leah Jennerson, Lawrence.
 Alexander Johnson,† Scandia.
 Edward Marion Johnson, Lawrence.
 John Milton Johnson, Iola.
 Ethel Myrtle Keeler, Lawrence.
 Nellie Irene Kennedy, Lawrence.
 Clara Helen Kent, Pleasanton.
 Bertha Kernen, Chanute.
 Amy Jean Kincaid, Olathe.
 Emma Anna Kohman, Dillon.
 Harold Leland Lentz, Halstead.
 Gertrude Nelle Lobdell, Great Bend.
 Margaret Emily Lorimer, Olathe.
 Mary Blanche Lorimer, Olathe.
 Kenneth Harrison Lott, Lawrence.
 Elizabeth Burt Lovejoy, Lawrence.
 Eugene Thistle Lowther, Emporia.
 Meda Frances Lucas,† Ashland.
 Louise Anna Luckan, Lawrence.
 Harold Adelbert Mack, Kansas City.
 Kathleen Elizabeth Macoubrie, Olathe.
 Josephine Clara Marak, Halstead.
 Alice Roser Marlowe,* Hartford.
 Edward Melville, Eudora.
 Margaret Florence Meyer, *Kansas City, Mo.*
 May Pauline Miller, Wichita.
 Floyd Emert Moody,* Fort Scott.
 Guy Rowley Moore, Lawrence.
 Lelia Zanane Moore, Holton.
 Minnie Marilla Moore, Lawrence.
 William Clay Morrow, Blue Mound.
 Gertrude Susan Morton, Topeka.
 Martha Minnie Moser, Blue Rapids.
 Blanche Veronica Mullen, Hutchinson.
 Bess Marie Murphy, Topeka.
 Lulu Lorena McCandles, Lawrence.
 Harry Van McCulloch, Lawrence.
 Frances Ethel McCune, Formoso.
 Laura Julia McKay, Longton.
 William Ayres McKinney, Howard.
 Dorothy McKown, *Kansas City, Mo.*
 Raymer McKuiston, Independence.
 Hubert Estel Nutt, Lawrence.
 Ida O'Brien, Independence.
 James Thomas O'Bryan, Lawrence.
 Mabel Parnell, Lawrence.
 Harland Leroy Paslay,* Perry.
 Ruth Peairs, Lawrence.
 Newton Arthur Peck,† Bethel.
 Ida Perry, *Kansas City, Mo.*
 Karl Gibson Pinckard, *Kansas City, Mo.*
 Edith Agnes Piotrowski, Fort Scott.
 Ruth Anita Plowman, Lawrence.
 Drexel Powell, Lawrence.
 Kenneth Wilkie Pringle, Alma.
 James Blaine Ramsey, Garnett.
 Clarence Albert Randolph, Clay Center.
 John Alfred Reber, Lawrence.
 Mabel Ethel Redmond, Lawrence.
 Florence Rhudy, Troy.
 Neva Ritter, Iola.
 Antoinette Robinson, Oswego.
 Emma Beatrice Roessler, Nashville.
 Sibyl Frances Rose, Rosedale.
 Gertrude Mary Russell, El Dorado.
 Mary Ruth Russell, Newton.
 Lucile Mayne Sage, Concordia.
 Bertha Sallee, Hutchinson.
 Lella Glayd Saunders, Lawrence.
 William Scalapino, Everest.
 George Frederic Schenck,* Centerville.
 Martha Myrtle Schultz,* Iola.
 Vernon Guy Scrivner, Lawrence.
 James Lee Sellers, Neosho Rapids.
 Florence Ruth Sheidenberger, Leavenworth.
 Henry Arthur Shinn, Cherryvale.
 Garrett Bruce Shomber, Ottawa.
 Stella Simmons, Lawrence.
 John Hickman Simms,* Lawrence.
 Naomi Corene Simpson, Topeka.
 Pearl Sitzler, Lawrence.
 Anna Maria Slade, Oskaloosa.
 Bertha May Smith, Kansas City.
 Charles William Smith,* Topeka.
 Frank Kenneth Smith, Ottawa.
 Hylas Chester Smith, Whitewater.
 Ralph Henry Smith, Lawrence.
 Mildred Dorothy Spake, Kansas City.
 Allen Sterling, Lawrence.
 Laura Frances Stewart, Lawrence.

* Assigned to Class of 1915.

† Assigned to Class of 1914.

BACHELOR OF ARTS—*continued.*

| | |
|---|--|
| Helen Marie Streeter, Kansas City. | Earl Vermillion,* Tescott. |
| Esther Ethel Swanson, Marquette. | McKinley Harold Warren,* Lawrence. |
| Wilbur Willis Swingle,* Lawrence. | Jane Kathleen Weaver, Blue Mound. |
| Clyde Frank Taylor,* Paola. | Ray Augustine West, Anthony. |
| Dix Teachenor, <i>Kansas City, Mo.</i> | Florence Mildred Whitcher,* Concordia. |
| George Sylvester Terry, Chanute. | Bessie Wilhite, Rosedale. |
| Emma Joanna Thiessen, Beloit. | Daisy Lucile Williams, Osage City. |
| Mary Helene Thomas, Waterville. | Lonzo Augustus Winsor,* Kensington. |
| Stella McDowell Thompson, <i>Parkville, Mo.</i> | Eleanor Adelia Wolf, Lawrence. |
| Leland Thompson, Marion. | Lillian Frances Wolf, Kansas City. |
| Helen Gertrude Thorpe, Morganville. | Sybil Woodruff, Lawrence. |
| Ernest Alfred Todd, Lawrence. | Estella Mae Wright, Lebanon. |
| Helen Katherine Trant, Perry. | Edwin William Wuthnow, Dillon. |
| Chester Earl Travis, Coffeyville. | Clark Edgar Young, Sterling. |

BACHELOR OF SCIENCE IN MEDICINE.

| | |
|------------------------------------|---------------------------------|
| Paul Edward Belknap, Atlanta. | Oliver William Miner, Sublette. |
| Frederick Bennett Campbell, Esbon. | Paul Rexford Neal, Lawrence. |
| Louis Boucher Gloyne, Kansas City. | Henry Nelson Tihen, Andale. |
| Harry Edwin Henderson, Alma. | |

BACHELOR OF SCIENCE.

Willis George Whitten, Marysville.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING.

| | |
|---|---|
| Glenn Leslie Alt, Denton. | Darl Shively James, Lawrence. |
| John Lawrence Bliss, Winfield. | Ross Custis Keeling, Oakley. |
| Frank Noel Bost, Augusta. | Elmo Franklin Miltner, Wichita. |
| Merrill Freeland Daum, Lawrence. | Clare Archie Poland, Atchison. |
| Charles Robert Fisher, Fort Scott. | Richard Newton Priest, Topeka. |
| Clarence William Harding,* Leavenworth. | Norman Fraser Strachan,* Eudora. |
| Gilman Case Harding,* Leavenworth. | Arthur Wellington Templin, Minneapolis. |
| Charles Boliver Holmes,* Lawrence. | Milton Jamison Vawter, Arkansas City. |
| Haydn Records Hunter, Bucklin. | Ellwood Gordon Washburn, Topeka. |

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING.

| | |
|-------------------------------------|-------------------------------------|
| Ernest C. Arnold, Cottonwood Falls. | Ralph Ethan Allen Putnam, Lawrence. |
| Guy Foster Davis, Lawrence. | Earl Russell Sanders, Lawrence. |
| Clarence Elmer Dimmitt, Lawrence. | Leo Frisby Smith, Lawrence. |
| Lawellin Boyd Laizure, Lawrence. | Harry M. Steven, Lawrence. |
| Verne Thomas Newton, Winfield. | Clifford Burton Sykes, Kingman. |
| Carl Oman, Garnett. | Leo N. Weibel,* Lawrence. |

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING.

| | |
|--------------------------------------|---------------------------------------|
| Samuel Erle Campbell, Meade. | Arthur John Nigg, Lawrence. |
| Paul L. Dryden, Wichita. | George August Rathert, Junction City. |
| John Milton Hartman,* Junction City. | Jerry Edward Stillwell, Erie. |
| Conrad Martin Jespersen, Lawrence. | Ralph Shannon Tait, Wichita. |
| Malcolm Lloyd McCune, Leavenworth. | Gordon Bennett Welch, Iola. |

BACHELOR OF SCIENCE IN MINING ENGINEERING.

| | |
|---------------------------------|----------------------------------|
| Lawrence Edward Cole, Lawrence. | Leland Emberson Fiske, Lawrence. |
|---------------------------------|----------------------------------|

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING.

| | |
|-------------------------------------|-------------------------------|
| Fred Eben Blachly, Abilene. | Lloyd Earl Jackson, Lawrence. |
| Marion Leslie English,* Dodge City. | Roy Otley Neal, Lawrence. |

BACHELOR OF SCIENCE IN ARCHITECTURAL ENGINEERING.

Edward Wadsworth Tanner, Lawrence.

BACHELOR OF LAWS.

| | |
|--|---|
| Glendon Allvine, Kansas City. | Neil Frank Cline, <i>Kansas City, Mo.</i> |
| Benjamin Harrison Asher, Great Bend. | Charles Henry Cory, Parsons. |
| Frank Clifford Baldwin, Washington. | Kirke Woodford Dale, Cedar Vale. |
| Edward Mozley Boddington, Kansas City. | Henry Russell Duncan, Lawrence. |
| Guy John Booker, Emporia. | James Hiram Eggleston, Parsons. |
| Roland Elmer Boynton, Lawrence. | Ira Russell Elswick, Caldwell. |
| Harold R. Branine, Hutchinson. | Kenneth Horville Foust, Iola. |
| Donald Charles Burnett, Chanute. | Admund Jennings Gibson, McCune. |
| Willis N. Calkins, Burlingame. | Harry Taylor Gray, St. John. |

* Assigned to Class of 1915.

† Assigned to Class of 1909.

BACHELOR OF LAWS—continued.

| | |
|--|--|
| Charles Eben Halloren, Ottawa. | John Rigg Moffat, Arkansas City. |
| Robert Warren Hemphill, Norton. | Charles Leroy Moore, Lawrence. |
| Joseph Wilford Hill, Lawrence. | Sidney Adrian Moss, Lawrence. |
| Arthur Herman Hoffman, Enterprise. | James Blaine McKay, Olathe. |
| Fred Hurd, Kingman. | John Thomas Pearson, Parsons. |
| Harland Bartlett Hutchings, Lawrence. | Clement Austin Reed, Burlington. |
| Cassus Willard King, Marion. | Robert Clark Skinner, Kansas City, Mo. |
| Guy Martin Lamar, Cottonwood Falls. | Robert Smith, Fort Scott. |
| Errett Earl Lamb, Yates Center. | DeWitt Mills Stiles, Lawrence. |
| Frederick Jay Leasure, La Cygne. | George Beauregard Strother, Lawrence. |
| Edwin Henry Lupton, Lawrence. | Raymond Dosh Teasley, Concordia. |
| Riley William MacGregor, Medicine Lodge. | Frederick Easton Whitten, Wellington. |

BACHELOR OF MUSIC.

| | |
|-------------------------------|---------------------------------------|
| Helen Dawson, Great Bend. | Ailene Jacquette Wilson, Clay Center. |
| Helen Jenkins, Guthrie, Okla. | |

BACHELOR OF PAINTING.

| | |
|-----------------------------------|--|
| Ruth Julia Kernodle, Devoe, Okla. | Willia Katherine Schmidt, Kansas City, Mo. |
|-----------------------------------|--|

TEACHER'S CERTIFICATE IN PIANO.

| | |
|-------------------------------|----------------------------------|
| Nina Louise Kanaga, Lawrence. | Bertha Marie Shuey, Muncie, Ind. |
|-------------------------------|----------------------------------|

TEACHER'S CERTIFICATE IN VOICE.

Edna M. Davis, Chanute.

TEACHER'S CERTIFICATE IN PUBLIC SCHOOL MUSIC.

| | |
|--|-------------------------------|
| Viah May Cross, Hutchinson. | Ivia Moser, Oberlin. |
| Dorothy Elizabeth Diver, Neosho Falls. | Doris Pauline Roebke, Holton. |
| Mary Anna Jarvis, Arkansas City. | Helen Topping, Cedar Point. |
| Pauline Ketchum, Lawrence. | |

TEACHER'S CERTIFICATE IN DRAWING AND PAINTING.

| | |
|-------------------------------|-------------------------------------|
| Mabel Wilma Arnett, Lawrence. | Edith Myrtle Ellsworth, Cherryvale. |
|-------------------------------|-------------------------------------|

BACHELOR OF SCIENCE IN PHARMACY.

| | |
|-------------------------------|-------------------------------|
| Hazel Day,* Canton. | Bert E. Sonneman, Blue Mound. |
| Hal Wilbur Sherman, Lawrence. | |

PHARMACEUTICAL CHEMIST.

| | |
|------------------------------------|--|
| Charles C. Cramer,\|\| Gardner. | Harry George Schroers, St. Joseph, Mo. |
| William Earl Gsell,† Olathe. | Olive Elizabeth Sherrard, Kansas City, Mo. |
| Howard William Hill,§ Elsmore. | Lewis Nathaniel Thorpe, Morganville. |
| James Glenn Hunsucker, Winchester. | Walter Winfred Wood, Lawrence. |
| Earle Asa Lindsauer, St. Johns. | |

GRADUATE IN PHARMACY.

| | |
|------------------------------------|------------------------------------|
| Marie Edith Beeson, Lawrence. | Ira Lee Goheen, Clay Center. |
| Joseph E. Campbell, Topeka. | Aura Lorraine Hale, Norton. |
| William Randolph Davis, Frankfort. | Mary Elizabeth Munford, Montezuma. |
| Charles Earle Delhotal, Attica. | |

DOCTOR OF MEDICINE.

| | |
|-------------------------------------|---|
| Donald Ray Black, Columbus. | Chauncey Angus McKinlay, Wichita. |
| Oran Columbus Dail, Lawrence. | Nelse Frederick Ockerblad, Kansas City. |
| Robert Crenshaw Davis, Kansas City. | Bertha Olivia Schwein, Rosedale. |
| Otto Jason Dixon, Mound Valley. | Herschel Roy Turner, Hoxie. |
| Paul McCheyne Drake, Kansas City. | Ross Eberhardt Weaver, Concordia. |
| Howard Earle Marchbanks, Pittsburg. | |

CERTIFICATE FOR GRADUATE NURSE.

| | |
|----------------------------------|---------------------------------|
| Nellie Perle Burkholder, Marion. | Grace Lucile Stratton, De Soto. |
| Sigrid Hogrebe, Kansas City, Mo. | Elsie Terry, Baldwin. |
| Ida Victoriano Kinland, Ashton. | Virginia Maude Yowell, Wichita. |

* Assigned to Class of 1915.

† Assigned to Class of 1914.

|| Assigned to Class of 1912.

§ Assigned to Class of 1913.

BACHELOR OF SCIENCE IN EDUCATION.

Ernest Clare Jones,* *Drexel, Mo.*

Raymer McQuiston, Independence.

UNIVERSITY TEACHER'S DIPLOMA.

| | |
|--|---|
| Florence May Alsop, Wakefield. | Kathleen Elizabeth Macoubrie, Olathe. |
| Edith Babb, Lawrence. | Josephine Clara Marak, Halstead. |
| Amelia Gregg Babcock, Lawrence. | May Pauline Miller, Wichita. |
| Bessie Belle Beckett, Macksville. | Minnie Marilla Moore, Lawrence. |
| Adele Johanne Bischoff, Washington. | William Clay Morrow, Blue Mound. |
| Mary Caecilia Bordenkircher, Burlington. | Martha Minnie Moser, Blue Rapids. |
| Eva Edith Chadwick, Bonner Springs. | Blanche Veronica Mullen, Hutchinson. |
| Luella Cory, Lansing. | Lulu Lorena McCanles, Lawrence. |
| Chester Claude Covey, Baxter Springs. | Frances Ethel McCune, Formoso. |
| Agnes Telfer Crawford, Girard. | Bernice McFarland, Lawrence. |
| Melvin Croan, Kincaid. | Dorothy McKown, <i>Kansas City, Mo.</i> |
| Amy Stark Cruzan, Lawrence. | Raymer McQuiston, Independence. |
| Alvin Pender Cummins, Winfield. | Marie Nelson, Greenleaf. |
| Clara-Gene Dains, Lawrence. | Ida O'Brien, Independence. |
| Beulah Davis, Hutchinson. | Mabel Parnell, Lawrence. |
| Jonathan Mahaffie Dow, Lawrence. | Edith Agnes Piotrowski, Fort Scott. |
| Elfrieda Draper, Lawrence. | Eunice Pleasant, Burlington. |
| Ruth Ophelia Dyche, Lawrence. | Ruth Anita Plowman, Lawrence. |
| John David Elliott, Holliday. | Drexel Powell, Lawrence. |
| Agnes Engel, Lawrence. | Frances Isabel Powell, Lawrence. |
| Alma Marjorie Freienmuth, Tonganoxie. | Florence Rhudy, Troy. |
| Forest Sheldon Frick, Lawrence. | Antoinette Robinson, Oswego. |
| Helen Louise Gephart, Lawrence. | Emma Beatrice Roessler, Nashville. |
| Frederick William Giesel, Spearville. | Sibyl Frances Rose, Rosedale. |
| Anna Lee Gill, Lawrence. | Lucile Mayne Sage, Concordia. |
| Virgil Mae Gordon, Fort Scott. | Bertha Sallee, Hutchinson. |
| Wheeler Russell Gregory, <i>Kansas City, Mo.</i> | Lella Glayd Saunders, Lawrence. |
| Bessie Burena Green, Coffeyville. | James Lee Sellers, Neosho Rapids. |
| Erma Belle Griest, Minneapolis. | Florence Ruth Sheidenberger, Leavenworth. |
| Cecil Ellen Grimes, Wichita. | Garrett Bruce Shomber, Ottawa. |
| Florence Evelyn Hale, Lawrence. | Stella Simmons, Lawrence. |
| Ella Avonia Hawkins, Lincoln. | Naomi Corene Simpson, Topeka. |
| Gladys Margaret Henry, Lawrence. | Pearl Sitzler, Lawrence. |
| Allen Murray Herron, Wellington. | Anna Maria Slade, Oskaloosa. |
| Lucile Hildinger, Lawrence. | Bertha May Smith, Kansas City. |
| Ella Mae Himpel, Tonganoxie. | Mildred Dorothy Spake, Kansas City. |
| Eda Lora Hinchman, Lawrence. | Allen Sterling, Lawrence. |
| Bessie Marce Huff, <i>Muskogee, Okla.</i> | Laura Frances Stewart, Lawrence. |
| Matie Leah Jennerson, Lawrence. | Emma Joanna Thiessen, Beloit. |
| Alexander Johnson, Scandia. | Mary Helene Thomas, Waterville. |
| Nellie Irene Kennedy, Lawrence. | Helen Katherine Trant, Perry. |
| Bertha Kernan, Chanute. | Chester Earl Travis, Coffeyville. |
| Lester Daniel Lacy, Lawrence. | Edith Carrie Weaver, Belleville. |
| Naomi Light, Lawrence. | Jane Kathleen Weaver, Blue Mound. |
| Gertrude Nelle Lobdell, Great Bend. | Florence Mildred Whitcheer, Concordia. |
| Margaret Emily Lorimer, Olathe. | Daisy Lucile Williams, Osage City. |
| Meda Frances Lucas, Ashland. | Eleanor Adelia Wolf, Lawrence. |
| Louise Anna Luckan, Lawrence. | F. Cowles Wright, Logan. |

* Assigned to Class of 1915.

† Assigned to Class of 1914.

ROLL OF STUDENTS.

GRADUATE SCHOOL.

- Appelboom, Peter Anton Frederick, L. R. N. '00, Naval Academy, Holland; Romance Languages; *Kansas City, Mo.*
- Arnett, Ila Maud, A. B. '14, University of Kansas; Mathematics; Lawrence.
- Asling, Edward Theophilus, A. B. '09, Central Wesleyan College, A. M. '14, Northwestern University; German; Lawrence.
- Baerg, Gerhard,* A. B. '16, University of Kansas; Education; Hillsboro.
- Baker, Anna Jane, A. B. '15, Friends University; English; Wichita.
- Baker, Pearl May, Ph. B. '13, University of Chicago; English; *Henryetta, Okla.*
- Baldwin, Ernest Joy, B. S. '15, University of Kansas; Chemistry; Cherryvale.
- Barteldes, Elsa, A. B. '15, University of Kansas; German; Lawrence.
- Blincoe, Homer Raymond, A. B. '15, University of Kansas; Anatomy; Columbus.
- Boddington, Edward Mozley,* A. B. '14, University of Kansas; Economics; Kansas City.
- Bodenhafer, Walter Blaine, A. B. '11, Transylvania University, LL. B. '12, University of Indiana, A. M. '15, University of Kansas; Sociology; Lawrence.
- Bohnstengel, Walter, B. S. '10, University of Kansas; Chemistry; Topeka.
- Brewster, Ray Quincey, B. S. '14, Ottawa University, A. M. '15, University of Kansas; Chemistry; Sedan.
- Brook, Elizabeth Cable, A. B. '12, A. M. '13, University of Kansas; History; Lawrence.
- Butts, Nannie, A. B. '14, Central College; English; *Dearborn, Mo.*
- Cady, William S.,* A. B. '16, University of Kansas; Journalism; Fredonia.
- Carothers, Willis Herbert, A. B. '07, University of Kansas; Education; Iola.
- Carr, Merritt Virginia,* A. B. '16, University of Kansas; English; Leavenworth.
- Clark, Hazel Blanche, A. M. '14, University of Kansas; English; *Kansas City, Mo.*
- Coe, Mabel, A. B. '13, Washburn College; English; Topeka.
- Cowles, Ina F., B. S. '01, Kansas State Agricultural College; Philosophy; Sibley.
- Cowper, Mary Octavine, A. M. '14, University of Kansas; Sociology; Lawrence.
- Craig, Elmer LeRoy, A. B. '10, McPherson College; History; McPherson.
- Cress, Erle Fletcher, A. B. '15, University of Kansas; History; *Perry, Okla.*
- Cruzan, Albert, A. B. '10, Texas Christian University; Sociology; Lawrence.
- Cunnick, Irene, A. B. '09, University of Kansas; Home Economics; Lawrence.
- Curry, Lewis G.,* A. B. '16, University of Kansas; Zoölogy; Dunavant.
- Daum, Kate, A. B. '13, University of Kansas; Home Economics; Lawrence.
- Day, Hazel, B. S. '15, University of Kansas; Botany; Canton.
- Dershem, Elsie, A. B. '08, Baker University; Education; Baldwin.
- Eaton, Ella Jane, B. S. '12, Highland College; Mathematics; Highland.
- Eldridge, James Swan, B. S. '16, K. S. M. T. Normal; Education; Kansas City.
- Ellis, Ralph,* A. B. '16, University of Kansas; Journalism; Lawrence.
- Eppard, Eunice Mildred, A. B. '15, University of California; Journalism; Lawrence.
- Esping, Lydia Constantia, A. B. '15, Bethany College; History; Lindsborg.
- Estes, Clarence, B. S. '09, University of Missouri, Ch. E. '12, University of Iowa; Chemistry; Lawrence.
- Evans, Harry Parker, A. B. '15, University of Kansas; Chemistry; Edgerton.
- Fagan, Raymond Allen, A. B. '14, St. Marys College; Journalism; St. Marys.
- Flint, Herbert, A. B. '14, University of Kansas; English; Girard.
- Foster, James Ralph, A. B. '13, Drury College; English; Lawrence.
- Foster, William Henry, A. B. '12, Drury College; Geology; Lawrence.
- Foulk, Ruby, A. B. '09, Campbell College; English; Muscotah.
- Garver, John Dillen, B. S. '10, University of Kansas; Engineering; Lawrence.
- Gault, Cora Hazel, A. B. '15, Southwestern College; German; Wellington.
- Granstedt, Andrew, A. B. '15, Kansas Wesleyan University; Sociology; Scandia.
- Hamilton, Frank Clair, B. S., Oklahoma Agricultural and Mechanical College; Chemistry; Lawrence.
- Harger, Rolla Neil, A. B. '15, Washburn College; Chemistry; Topeka.
- Haruly, Paul Witmore, A. B. '15, McPherson College; Mathematics; McPherson.
- Havenhill, L. D., B. S. '03, University of Kansas; Anatomy; Lawrence.
- Haworth, Henry Huntsman, A. B. '15, University of Kansas; Geology; Lawrence.
- Hetzl, Edna Lucile, A. B. '12, Ottawa University; German; Waverly.
- Higgs, Mamie Alberta, A. B. '15, College of Emporia; English; Hartford.
- Holombek, James Adolphus, A. B. '15, Kansas City University; Economics; Lawrence.
- Holzinger, Karl John, A. B. '15, University of Minnesota; Mathematics; Lawrence.
- Horne, Samuel Henry, A. B. '07, University of Texas; *Enid, Okla.*
- Householder, Victor H.,* A. B. '16, University of Kansas; Zoölogy; Columbus.
- Huff, Bessie Maree,* A. B. '16, University of Kansas; German; *Muskogee, Okla.*
- Hungerford, Herbert B., A. M. '13, University of Kansas; Entomology; Lawrence.
- Jacobs, Jessie Marie, A. B. '14, McPherson College; Mathematics; McPherson.

* Seniors who have completed within ten credit hours sufficient hour work for the A. B. or B. S. degree and are doing graduate work.

- Jones, Cassie Fern, A. B. '07, Friends University, A. M. '08, Earlham College; English; Wichita.
- Jones, Ethel Anna, A. B. '13, University of Kansas; Chemistry; Chanute.
- Jones, William Albert, A. B. '15, University of Kansas; Chemistry; Hoisington.
- Kellogg, Arthur Remington, A. B. '15, University of Kansas; Zoölogy; Lawrence.
- Kitchell, Bertha, A. B. '12, University of Wisconsin; Chemistry; Topeka.
- Kleihege, George Wm., A. B. '02, Kansas Wesleyan, A. M. '11, University of Kansas; Sociology; Lawrence.
- Kroesch, Edward Daniel, A. B. '15, Ottawa University; German; Ottawa.
- Krueger, Karl Adalbert, A. B. '13, Midland College; Music; Atchison.
- Lackey, Donald H.,* B. S. '15, University of Kansas; Chemistry; Peabody.
- Lacy, Lester Daniel, A. B. '14, Phillips University; Sociology; Lawrence.
- Latimer, Wendell Mitchell, A. B. '15, University of Kansas; Chemistry; Lawrence.
- Latta, Trine Hardy, A. B. '14, University of Kansas; Botany; Wichita.
- Lawson, Paul Bowen, B. S. '09, Central Holiness University; Entomology; Delphos.
- Lentz, Harold L.,* A. B. '16, University of Kansas; Chemistry; Halstead.
- Lichtenwalter, Homer O., B. S. '11, McPherson College, M. S. '13, University of Kansas; Chemistry; Lawrence.
- Long, Walter Sterritt, A. M. '07, Ohio Wesleyan; Chemistry; Lawrence.
- Lovejoy, Elizabeth Burt,* A. B. '16, University of Kansas; English; Lawrence.
- Luckan, Louise Anna,* A. B. '16, University of Kansas; Botany; Lawrence.
- Luther, Winifred Helena, A. B. '06, University of Kansas; English; Lawrence.
- Lyder, Ernest Elmer, B. S. '13, University of Kansas; Chemistry; Paola.
- McAuley, Auley, A. B. '06, Westminster College; Chemistry; Lawrence.
- McNaught, James B.,* A. B. '16, University of Kansas; Botany; Girard.
- McQuiston, Raymer,* A. B. '16, University of Kansas; Education; Independence.
- Maag, Oscar Lewis, B. S. '13, University of Kansas; Chemistry; Lawrence.
- Malin, James Claude, A. B. '14, Baker University; History; Lewis.
- Maloy, Daniel Henry, A. B. '14, University of Kansas; Journalism; Eureka.
- Michaels, Hazel, A. B. '13, Baker University; German; Scranton.
- Milligan, Jay McDonald, A. B. '14, Geneva College; Bacteriology; Olathe.
- Myers, Anna Groves, A. B. '03, Wells College; Education; Lawrence.
- Nelson, Cyril Arthur, A. B. '14, Midland College; Mathematics; Troy.
- Nelson, Ralph W., A. B. '15, Phillips University; Sociology; Lawrence.
- Olinger, Stanton, A. M. '13, University of Kansas; Sociology; Lawrence.
- Olney, Avery Fincher, A. B. '15, University of Kansas; Education; Lawrence.
- Opperman, Margaret Elizabeth, A. B. '15, University of Kansas; English; Baxter Springs.
- O'Roke, Earl Cleveland, A. B. '12, University of Kansas; Zoölogy; Lawrence.
- Osborne, Edna Pearle, A. B. '11, University of Illinois, A. M. '14, University of Kansas; English; Lawrence.
- Parker, Mary Elizabeth, A. B. '09, University of Kansas; German; Lawrence.
- Parkhurst, Ivan Paul, B. S. '14, University of Kansas; Chemistry; Kinsley.
- Patterson, Oliver Wellington, jr., A. B. '13, University of Kansas; Latin; Lawrence.
- Poos, Fred W., jr., A. B. '15, University of Kansas; Entomology; Potter.
- Pratt, Dudley James, A. B. '13, Washburn College; Botany; Rossville.
- Rader, Alexander Knox, A. B. '15, University of Kansas; Economics; Howard.
- Ransom, Will A., A. B. '15, Fairmount College; Sociology; Derby.
- Read, Marion Harvey,* A. B. '10, Union Christian College; Education; Lawrence.
- Rees, Maurice Holmes, A. M. '05, University of Illinois; Chemistry; Lawrence.
- Ritter, Neva,* A. B. '16, University of Kansas; Botany; Iola.
- Roberts, Harry Ashton, B. S. '02, University of Illinois; Mathematics; Lawrence.
- Robertson, W. R., Ph. D. '15, Harvard University; Chemistry; Lawrence.
- Savage, Anna Elizabeth, A. B. '13, University of Kansas; English; Lawrence.
- Schulz, Tina Iphigenia, A. B. '14, Tabor College; German; Hillsboro.
- Seibel, Clifford Winslow, B. S. '13, University of Kansas; Chemistry; Lawrence.
- Siever, Carl Henry, A. B. '13, University of Kansas; Chemistry; Wichita.
- Simpson, Naomi,* A. B. '16, University of Kansas; History; Topeka.
- Sirpless, Eleanor Ann, A. B. '07, A. M. '08, University of Kansas; Botany; Lawrence.
- Skourup, Wilbur Nielson,* B. S. '15, Kansas State Agricultural College; Bacteriology; Colony.
- Smith, Clarence, A. B. '15, University of Kansas; Chemistry; Sedan.
- Smith, Dan Everett, A. B. '89, A. M. '92, Monmouth College; Sociology; Lawrence.
- Smith, Roy Esmond, A. B. '12, University of Kansas; Bacteriology; Winchester.
- Smyth, Jessie Miriam, A. B. '13, University of Kansas; English; Eureka.
- Soper, Fred Lowe, A. B. '14, University of Kansas; Anatomy; Hutchinson.
- Sorensen, Ephraim Joseph, A. B. '15, University of Kansas; Economics; McPherson.
- Spicer, William Sidney,* A. B. '16, University of Kansas; Bacteriology; Lawrence.
- Steele, DeForest Clement, A. B. '12, McPherson College; History; McPherson.
- Stone, Marion, A. B. '15, University of Arkansas; English; Fayetteville, Ark.
- Stouffer, Mrs. Anna Shepard, A. B. '10, University of Iowa; English; Lawrence.
- Strahm, Vivian Susanne, A. B. '14, University of Kansas; Anatomy; Lawrence.
- Swingle, Wilbur Willis, A. B. '14, University of Kansas; Zoölogy; Lawrence.
- Swogger, Leo Glenn, A. B. '15, Baker University; Latin; Edgerton.
- Talcott, Avis, A. B. '06, Rockford College; Chemistry; Lawrence.
- Templin, Marjorie Alta, A. B. '15, University of Kansas; Anatomy; Lawrence.
- Tippin, Ernest Elwood,* A. B. '12, University of Kansas; Anatomy; Sterling.
- Thiessen, Emma,* A. B. '16, University of Kansas; Home Economics; Beloit.
- Trimble, Eva Laura, A. B. '14, Cooper College; Mathematics; Sterling.

* Seniors who have completed within ten credit hours sufficient hour work for the A. B. or B. S. degree and are doing graduate work.

Vansell, George H., A. B. '15, University of Kansas; Entomology; Muscotah.
 Vaughn, Miles Walter, A. B. '15, University of Kansas; Journalism; Winfield.
 Vaughn, Tillman Herbert, A. B. '14, Southwestern College; Chemistry; Winfield.
 Wahlin, Hugo Bernard, A. B. '15, Bethany College; Physics; Lindsborg.
 Watkins, Mabel Olive, A. B. '11, University of Kansas; English; Lawrence.
 Weatherhogg, Vera, A. B. '15, University of Kansas; Romance Language; *Kansas City, Mo.*
 Weaver, Edith Carrie, A. B. '15, University of Kansas; English; Belleville.
 Wellhouse, Walter Housley, A. B. '13, University of Kansas; Entomology; Topeka.
 Wesley, John Bliss, A. B. '11, Southwestern College; Chemistry; Stafford.
 West, Ada Helen, A. B. '15, Midland College; Mathematics; *Keokuk, Iowa.*
 Westerfield, Marie, A. B., '15, Kansas City University; English; Topeka.
 Whittemore, Laurens Ellis, A. B. '14, Washburn, A. M. '15, University of Kansas; Physics; Topeka.
 Williams, James Lisle, A. B. '15, University of Kansas; Chemistry; Chetopa.
 Williams, Letha Louise, A. B. '15, University of Kansas; Home Economics; Lawrence.
 Wolf, Edwin Fay, B. S. '11, Central Holiness University; Entomology; *University Park, Iowa.*
 Wood, Bessie Marion, A. B. '04, University of Kansas; English; Strong.
 Woodruff, Sybil,* A. B. '16, University of Kansas; Home Economics; Lawrence.
 Woods, Mabel Faye, A. B. '14, University of Kansas; English; Burden.
 Young, Clark Edgar,* A. B. '15, University of Kansas; Bacteriology; Sterling.

GRADUATES, 151.

* Seniors who have completed within ten credit hours sufficient hour work for the A. B. or B. S. degree and are doing graduate work.

THE COLLEGE.

SENIORS.

- Adams, Howard; Maple Hill.
 Ainsworth, William; Lyons.
 Albaugh, Houghton Samuel; Topeka.
 Anderson, Forrest Nelson; Lawrence.
 Arndt, Elmer Rudolph; Lawrence.
 Babcock, Amelia Gregg; Lawrence.
 Baerg, Gerhard; Hillsboro.
 Barber, Ward Seymour; Abilene.
 Barnes, Nellie; Gardner.
 Bartberger, Ethel Pauline; Merriam.
 Belknap, Paul Edward; Atlanta.
 Bennett, Edward Earl; Stafford.
 Bierbower, Charlotte Alice; *Braman, Okla.*
 Bischoff, Adele; Washington.
 Bishop, Kenneth Grant; Kansas City.
 Bordenkircher, Caecilia Mary; Burlington.
 Bracewell, Russell Starkey; Kincaid.
 Braden, Ozilla Olive; Elsmore.
 Bradley, Aubrey; Blue Mound.
 Bresette, Louis Lafe; Topeka.
 Brown, Alice Lenore; Lawrence.
 Bruington, James Clarke; Dodge City.
 Burns, Odis Herschel; Pittsburg.
 Butin, James Abram; Fredonia.
 Cady, William Sheldon; Fredonia.
 Campbell, Fred Bennett; Esbon.
 Carpenter, Izetta Pearl; Kansas City.
 Carr, Merritt Virginia; Leavenworth.
 Chadwick, Eva Edith; Bonner Springs.
 Champlin, Mable Louise; Phillipsburg.
 Chase, Zula; Hutchinson.
 Coffey, Frank Ellsworth; Kansas City.
 Coleman, Margaret; Lawrence.
 Collins, Ralph Kable; Lawrence.
 Coors, Alice; *East Las Vegas, N. M.*
 Cornforth, Marguerite; Lawrence.
 Cory, Luella E.; Lansing.
 Covey, Chester Claude; Baxter Springs.
 Craig, Louise Harriet; Lawrence.
 Crawford, Agnes Telfer; Girard.
 Creighton, Alexander Edwin; Washington.
 Cress, Beulah Louise; Clements.
 Crowell, Harold Baxter; Pittsburg.
 Cruzan, Amy Stark; Lawrence.
 Culter, Robert Clyde; Emporia.
 Curry, Lewis Allison; Dunavant.
 Dains, Clara Gene; Lawrence.
 Davis, Beulah; Hutchinson.
 Davis, Bryan Llewellyn; Lawrence.
 Davis, Margaret Rogers; Lawrence.
 Degen, Fred Samuel; *Kansas City, Mo.*
 Dodds, W. Hector; Sterling.
 Doub, Charles Orville; Augusta.
 Dow, Jonathan Mahaffie; Lawrence.
 Draper, Elfrieda; Lawrence.
 Dyche, Ruth Ophelia; Lawrence.
 Eaton, Oren Douglas; Lawrence.
 Edwards, Wayne Steele; Chapman.
 Elliott, Altina Jane; Lawrence.
 Elliott, John David; Holliday.
 Ellis, Ralph; Lawrence.
 Embry, Cecil Porter; Lawrence.
 Emerson, Ralph Waldo; Osborne.
 Engel, Lawrence Power; Lawrence.
 Fwing, Ruth Edith; Parsons.
 Fair, George Harlan; Lawrence.
 Fischer, Wilbur Alexander; *La Cygne.*
 Fitz Simmons, Lee Joshua; Cunningham.
 Foster, Edward Wendell; Lawrence.
 Freienmuth, Alma Marjorie; Tonganoxie.
 Funk, Cornelius Herbert; Hillsboro.
 Gephart, Helen Louise; Lawrence.
 Gill, Anna Lee; Lawrence.
 Gilmore, Isabel Elizabeth; Lawrence.
 Gleissner, John M.; Abilene.
 Gloyne, Louis Boucher; Kansas City.
 Godding, Frank Eugene; Lawrence.
 Gordon, Virgil Mae; Fort Scott.
 Gossard, Mary Elizabeth; Oswego.
 Grady, Archie Verne; Lawrence.
 Grady, Grover Quinton; Alden.
 Greer, Helen; Lawrence.
 Griesa, Theodore Scott; Lawrence.
 Grimes, Cecil Ellen; Lawrence.
 Hale, Florence Evelyn; Lawrence.
 Hammer, Zetha; *Salt Lake City, Utah.*
 Hawkins, Ella Evonia; Lincoln.
 Henderson, Harry Edwin; Alma.
 Henry, Gladys Margaret; Lawrence.
 Herron, Allen Murray; Wellington.
 Hershberger, Helen Louise; Wichita.
 Hildinger, Lucile; Lawrence.
 Himpel, Minnie Anna; Tonganoxie.
 Hoadley, Corda Lea; Fort Scott.
 Hoffmann, Harry William; Lawrence.
 Holmes, Opal A.; Lawrence.
 Hopkins, Louise Marjorie; Ellsworth.
 Horton, Ruth; Iola.
 Hosford, Vanetta; Lawrence.
 Householder, Victor Hugo; Columbus.
 Howe, John Wesley; Lawrence.
 Huff, Bessie Maree; *Muskogee, Okla.*
 Hurd, Robert E.; Wichita.
 Hurst, Hazel Magaline; Wichita.
 Hurst, Helen; *Kansas City, Mo.*
 Imus, Avis Louise; *St. Joseph, Mo.*
 Jackson, Ruth S.; Lawrence.
 Jamieson, Norma Janet; Burlingame.
 Jaqua, Josephine; St. Francis.
 Jennerson, Matie Leah; Lawrence.
 Jennings, Leonora; Winfield.
 Johnson, Edward Marion; Lawrence.
 Johnson, John Milton; Iola.
 Johnson, Samuel Augustus; Troy.
 Jones, Ogden Sherman; Lawrence.
 Keeler, Ethel Myrtle; Lawrence.
 Kennedy, Nellie Irene; Lawrence.
 Kennedy, Zora Madge; Lawrence.
 Kent, Clara Helen; Pleasanton.
 Kernen, Bertha; Chanute.
 Kincaid, Amy Jean; Lawrence.
 King, Rose Gertrude; Wichita.
 Klepinger, Dayton Parker; Lawrence.
 Kohman, Emma Anna; Dillon.
 Lacy, Mrs. Nell Beatrice; Lawrence.
 Lentz, Harold Leland; Halstead.
 Lobdell, Gertrude Nelle; Great Bend.
 Lorimer, Margaret Emily; Olathe.
 Lorimer, Mary Blanche; Olathe.
 Lott, Kenneth Harrison; Lawrence.
 Lovejoy, Elizabeth Burt; Lawrence.
 Lowther, Eugene Thistle; Emporia.
 Luckan, Louise Anna; Lawrence.
 Lytle, William Orland; Lawrence.
 Mack, Harold Adelbert; Kansas City.
 Macoubrie, Kathleen Elizabeth; Olathe.

SENIORS—continued.

Magill, Helen Lucile; Sabetha.
 Marak, Josephine Clara; Lawrence.
 Melville, Edward William; Eudora.
 Meyer, Margaret Florence; *Kansas City, Mo.*
 Michener, John Morrison; Wichita.
 Miller, Forest Jennings; Sabetha.
 Miller, May Pauline; Wichita.
 Miner, Oliver William; Sublette.
 Moore, Guy Rowley; Lawrence.
 Moore, Lelia Zanane; Holton.
 Moore, Minnie Marilla; Lawrence.
 Morrow, William Clay; Blue Mound.
 Moser, Martha Minnie; Blue Rapids.
 Mullen, Blanche Veronica; Hutchinson.
 Murphy, Bess Marie; Topeka.
 Myers, Ethel Pearl; Lawrence.
 McCaules, Lulu Lorena; Lawrence.
 McCauley, Amy Evelyn; Hoisington.
 McColloch, Harry Van; Lawrence.
 McCune, Frances Ethel; Formoso.
 McKay, Laura Julia; Longton.
 McKernan, Maureen; Topeka.
 McKinney, William Ayres; Howard.
 McKown, Dorothy; *Kansas City, Mo.*
 McNaught, James Bernard; Girard.
 McQuiston, Raymer; Independence.
 Nelson, Edith Mathis; Lawrence.
 Nelson, Naomi Olive; Topeka.
 Noll, Karl; Ransom.
 Nutt, Hubert Estel; Lawrence.
 O'Brien, Ida; Independence.
 O'Bryan, James Thomas; Lawrence.
 Oechsli, Waldo Raymond; Lawrence.
 Owens, Hugh Henry; Chanute.
 Padgett, Earl Calvin; Glasco.
 Parnell, Mabel; Lawrence.
 Peairs, Ruth; Lawrence.
 Peck, Mayme Evelyn; *Westboro, Mo.*
 Perry, Ida; *Kansas City, Mo.*
 Perry, Mabel; *Kansas City, Mo.*
 Pinckard, Karl Gibson; Lawrence.
 Piotrowski, Edith Agnes; Fort Scott.
 Plowman, Ruth Anita; Mayetta.
 Powell, Drexel; Lawrence.
 Pringle, Kennel Wilkie; Alma.
 Ramsey, James Blaine; Garnett.
 Randolph, Clarence Albert; Clay Center.
 Reber, John Alfred; Lawrence.
 Redmond, Mabel Ethel; Lawrence.
 Reynolds, Roy Albert; Paola.
 Rhudy, Florence; Troy.
 Ritter, Neva; Iola.
 Robinson, Antoinette; Oswego.
 Roessler, Emma Beatrice; Nashville.
 Rose, Sibyl Frances; Rosedale.
 Russell, Gertrude Mary; El Dorado.
 Russell, Mary Ruth; Newton.
 Sage, Lucile Mayne; Concordia.
 Sallee, Bertha V.; Hutchinson.
 Saunders, Lella Glayd; Lawrence.
 Scalapino, William; Everest.
 Scrivner, Vernon Guy; Lawrence.
 Sellers, James Lee; Neosho Rapids.
 Sheidenberger, Florence Ruth; Leavenworth.
 Shinn, Henry Arthur; Cherryvale.
 Shomber, Garrett Bruce; Ottawa.
 Simmons, Stella; Lawrence.
 Simpson, Naomi Corene; Topeka.
 Sitzler, Pearl; Lawrence.
 Skourup, Wilbur Nielson; Colony.
 Slade, Anna Maria; Oskaloosa.
 Smith, Ralph Henry; Lawrence.
 Smith, Bertha May; *Kansas City.*
 Smith, Charles William; Topeka.
 Smith, Errett Garrison; Delphos.
 Smith, Frank Kenneth; Ottawa.
 Smith, Hylas Chester; Whitewater.
 Spake, Mildred Dorothy; *Kansas City.*
 Spicer, William Sidney; Lawrence.
 Sterling, Allen; Lawrence.
 Stewart, Laura Frances; Lawrence.
 Still, Charles Mattison; Florence.
 Streeter, Helen Marie; *Kansas City.*
 Stubbs, Stella; Lawrence.
 Swanson, Esther Ethel; Marquette.
 Taylor, David Glazier; Sedgwick.
 Teachenor, Dix; *Kansas City, Mo.*
 Terry, George Sylvester; Chanute.
 Thiessen, Emma; Beloit.
 Thomas, Helene Mary; Lawrence.
 Thompson, Leland; Marion.
 Thoren, Lella Gertrude; Eudora.
 Thorpe, Helen Gertrude; Morganville.
 Tihen, Henry Nelson; Andale.
 Todd, Ernest Alfred; Lawrence.
 Trant, Helen Katherine; Perry.
 Travis, Chester Earl; Coffeyville.
 Trueblood, Asa James; La Harpe.
 Warren, McKinley Harold; Lawrence.
 Weaver, Jennie Kathleen; Blue Mound.
 Wedell, Hugo Theodore; Lawrence.
 Weltmer, Loren Edward; Smith Center.
 West, Ray Augustine; Anthony.
 Wilhelm, Ilsa Emma; Lawrence.
 Wilhelm, Irma Louise; Lawrence.
 Wilhite, Bessie; Rosedale.
 Williams, Daisy Lucile; Osage City.
 Wingfield, Laura; Junction City.
 Wingfield, Melissa Beulah; Junction City.
 Wolf, Eleanor Adelia; Lawrence.
 Wolf, Lillian Frances; Lawrence.
 Woodruff, Sybil; Lawrence.
 Woolsey, William Edwin; Formoso.
 Wright, Estella May; Lebanon.
 Wuthnow, Edwin William; Dillon.
 Young, Clark Edgar; Sterling.

SENIORS, 252.

JUNIORS.

Abel, Barbara; *St. Louis, Mo.*
 Ainsworth, Lydia Louise; Lyons.
 Anderson, Freda Emma May; *Pueblo, Colo.*
 Anderson, Mabel; Lawrence.
 Anderson, Nathan Lyle; Partridge.
 Anderson, Zella May; Lawrence.
 Angevine, Dorothy Lou; Lawrence.
 Appel, Hilmar George; Lawrence.
 Ashton, Annette Hughes; Lawrence.
 Atkinson, Lila; Lawrence.
 Auchard, Ralph Emerson; Clay Center.
 Bacon, Robert Binford; Hutchinson.
 Baker, Fenton J.; *Joplin, Mo.*
 Bartlett, Glenn Cale; Belle Plaine.
 Bataille, Sallie Catherine; Lawrence.
 Bennie, Herbert Stewart; Almena.
 Berger, Ben J.; Halstead.
 Beveridge, Melvin Kelsey; Russell.
 Bixby, Abigail Cornelia; McPherson.
 Blackburn, Vera Edith; Larkinsburg.
 Blackfan, Lucile Lawrence; Halstead.
 Blackwelder, Will Gideon; Isabel.
 Blasdels, Harry Emert; Garnett.
 Booth, Myron Murray; Hutchinson.
 Bowman, William Walter; Topeka.
 Brown, Ben Eli; Iola.
 Brown, Dorothy Thornton; *Joplin, Mo.*
 Brown, Nettie Belle; Peabody.
 Brownlee, William Oscar; Stafford.
 Bumann, Alice; *Tahlequah, Okla.*
 Burke, Esther Margaret; Lawrence.
 Burmeister, Henry Louis; Holyrood.
 Burton, Mary Cecile; *Kansas City, Mo.*
 Busenbark, Ross Elmer; Lawrence.

JUNIORS—continued.

Butts, Margaret Avis; Mankato.
 Caffrey, John Parker; Mount Hope.
 Cain, Augustus Robert; Pittsburg.
 Calene, John Lucian; Sylvan Grove.
 Carson, Hazel Ellene; Ashland.
 Castles, Ruth Minerva; Lawrence.
 Challiss, John Van Hoesen; Atchison.
 Clark, Lee Earnest; Winchester.
 Coffelt, Gola William; Blue Mound.
 Coffin, Dora Belle; Baldwin.
 Cole, Stella Mae; Lawrence.
 Colt, James Dennison; Manhattan.
 Cooper, Rebekah Blackwood; Wichita.
 Cope, John Gardner; Lawrence.
 Cox, Sara Evelyn; *Alva, Okla.*
 Griley, Clifford F.; Lawrence.
 Crouch, Alice Amelia; Lawrence.
 Cruzan, Evelyn May; *Bethany, Mo.*
 Curl, Grace; Lawrence.
 Dail, John Byron; Lawrence.
 Daniel, Harvey Oscar; Lawrence.
 Daniels, Ruth Natalie; Hiawatha.
 Darby Olin Earnest; Washington.
 Davidson, Roy; Nickerson.
 Deibert, Emory Olin; Lawrence.
 DeRoin, Cecil Sunshine; White Cloud.
 Dixon, Jessie Lucile; Mound Valley.
 Dryden, Lockie Louise; Larned.
 Dunigan, Florence Esther; Lawrence.
 Duvall, Alice Lucy; Hutchinson.
 Dyche, Junius Walter; *Oklahoma City, Okla.*
 Dyche, Lewis Lindsay; Lawrence.
 Ecroyd, Guy L.; Arkansas City.
 Elliott, Arthur Edward; Lawrence.
 Elmore, Mabel Marshall; Tecumseh.
 Else, Daniel Henry; Mapleton.
 Faragher, Ida Keeley; Lawrence.
 Fee, Charles John; Meade.
 Fischer, Elfriede Christine; Lawrence.
 Flag, Paul Eldridge; Lawrence.
 Fletcher, Liona Blanche; *Lamar, Mo.*
 Foster, Nellie Anderson; Olathe.
 Foster, Ruth Mitchell; Topeka.
 Fox, Charlotte; *Nashville, Tenn.*
 Frederick, James Vincent; Bonner Springs.
 Fridley, John Blaine; Lawrence.
 Frisbie, Helen Gertrude; Oskaloosa.
 Gallagher, Helen Marie; Lawrence.
 Galle, James Lamer; McPherson.
 Gardner, Jesse Fleetwood; Preston.
 Gear, Marvin Louis; Buffalo.
 Gempel, Eugene Peter; Leavenworth.
 Gilles, Clifford Lawrence; Kansas City.
 Goldsworthy, Ruth; Lawrence.
 Govier, Mary Louise; *Kansas City, Mo.*
 Graff, Marie Octavia; Topeka.
 Graham, Roy; Summerfield.
 Grampp, Frederick William; Lawrence.
 Greer, Norman James; Lawrence.
 Gregory, Marguerite Electa; Coffeyville.
 Griffith, Rosalie May; Lawrence.
 Groene, Everett Kenneth; Kansas City.
 Grooms, Minnie Lesley; *Springville, Utah.*
 Grutzmacher, Hugh Alton; Onaga.
 Hall, Gail; McPherson.
 Hammond, Percy Don; Lawrence.
 Hardy, Frances Mabel; Altoona.
 Hargett, Ray Hudson; Lawrence.
 Harkrader, Winifred; Pratt.
 Harris, Cathlene Rose; Eudora.
 Hashinger, Edward Hageman; Lawrence.
 Hawkins, Ashley Dorothy; Lawrence.
 Heacock, Alvin Earl; Attica.
 Heath, Milton Sydney; Pratt.
 Heath, William Rea; Kansas City.
 Hedrick, Louise Nancy; *Kansas City, Mo.*
 Heizer, Margaret Rosamond; Osage City.
 Hepler, Russell Calvin; Cottonwood Falls.
 Herriott, James Homer; Garden City.
 Hetherington, George Franklin; Topeka.
 Hill, Alfred Gibson; Topeka.
 Hill, Lee Verne; Osborne.
 Hilsman, Itasca; Kansas City.
 Hoar, Florence Eckert; Lawrence.
 Hoffman, Howard Everett; Abilene.
 Hostetter, Anita Miller; Lawrence.
 Howland, Herbert; Ludell.
 Huffman, Charles Albert; Belle Plaine.
 Huffman, Mona Clare; Columbus.
 Hull, Lewis Madison; Nickerson.
 Hullinger, Edwin Ware; Osborne.
 Hunter, Chauncey Depew; Abilene.
 Huntsinger, Ivan W.; Esbon.
 Huston, Nellie Georgene; Belvue.
 Irvin, Roy Robert; Lawrence.
 Irvine, Frances Belle; Fort Scott.
 Irwin, Albert Bristow; Kansas City.
 Ise, Frank Harold; Lawrence.
 Jackson, Byrdie Delilah; Kansas City.
 Jacobs, Sara Frank; Lawrence.
 Johnson, Egbert Guy; Pratt.
 Johnson, John Wesley; Newton.
 Jones, James Edward; Fredonia.
 Jones, Mary Lenora; *Oklahoma City, Okla.*
 Jones, Miriam Austin; Wichita.
 Kampert, George Joseph; Lawrence.
 Keizer, Katherine; *Kansas City, Mo.*
 Kilgore, Violet Georgia; Wichita.
 Kincaid, Beth; Lawrence.
 Kirkendall, Mabel Jeanne; Natoma.
 Knapp, Roy Stanley; White City.
 Krehbiel, Luella Minerva; Moundridge.
 Kryder, George Buchanan; Lawrence.
 Lahn, Anita; Wichita.
 Lanning, Hazen Berdette; Wichita.
 Larrick, Erma Beatrice; Lenora.
 Lawellin, Samuel J.; Kansas City.
 Lehman, Lola May; Olathe.
 Lohrenz, Abraham M.; Mound Ridge.
 Lucas, Flossa Irene; Cherokee.
 Lucas, Virginia Wiles; *Kansas City, Mo.*
 Luckan, Gladys May; Lawrence.
 Lytle, Harold Hopkins; Lawrence.
 Markham, Dorothy; Pittsburg.
 Martin, Ethel Marguerite; Lawrence.
 Martin, Josephine; *Kansas City, Mo.*
 Martin, Lottie Gretchen; Lawrence.
 Mella, Sherwin E.; Leavenworth.
 Miller, Harold Cecil; Chanute.
 Miller, John Moore; Atchison.
 Miller, Lewis Rex; *Kansas City, Mo.*
 Moore, Grover Cleveland; Wayne.
 Moore, Helen; Hutchinson.
 Moore, Ruth Banoer; Hutchinson.
 Moore, Vernon Aubrey; Gas.
 Murphy, Adele; Jarbalo.
 Murphy, Ralph Leon; Chanute.
 Myers, Burton Allen; Osborne.
 McClenahan, John Stuart; Miltonvale.
 McDonnell, Agnes Marie; Kansas City.
 McElvain, Mary Margaret; Hutchinson.
 McEwen, Fred John; Iola.
 McGreevy, Ethel Agatha; Great Bend.
 McGuire, Hugh Burdette; Lawrence.
 McKaughan, Henrietta; Lawrence.
 McKemey, Lloyd Walker; Winchester.
 McKinney, Mary Emma; Iola.
 McNutt, Carolyn; *Kansas City, Mo.*
 Nelson, Charles Summer; Westphalia.
 Nelson, Harley Arthur; McPherson.
 Nelson, Lawrence Strong; Iola.
 Nielson, Harry Martin; Natoma.
 Nixon, Earl Kaiser; Severy.
 Nodurft, Elmer J.; Lawrence.
 Nordstrom, Arnold Reynold; Marquette.
 O'Donnell, Frederick Ross; Ellsworth.
 Ogg, Francis Willard; Lawrence.

JUNIORS—continued.

Oldridge, Mary Belle; Lawrence.
 Pace, John David; Parsons.
 Palmer, Lawrence Alfred; Garnett.
 Parker, Jet Collins; Bonner Springs.
 Patterson, Chester March; Galena.
 Patterson, Helen Marguerite; Victoria.
 Paul, Hubert Whiting; Blue Rapids.
 Pegues, Henry Slover; Hutchinson.
 Pickard, Samuel; Lawrence.
 Poirier, Constant John; Wathena.
 Powell, Artemesia; Lawrence.
 Priest, Walter Scott; Wichita.
 Ramsey, Daisy Leona; Lawrence.
 Rankin, Veda Rhey; Paola.
 Rathfon, Lawrence Paul; Fort Scott.
 Ray, Jennie Mabel; Lawrence.
 Rearick, Anna Christine; *Aurora, Mo.*
 Reed, Robert Henry; Alma.
 Reeves, Irene Janette; Dodge City.
 Reser, Oscar Optima; *Kansas City, Mo.*
 Richter, Clarence Henry; Alma.
 Riste, Rose Alma; Lawrence.
 Rively, Isidore; Kansas City.
 Robbins, Roy Stone; Russell.
 Rodkey, Fred Stanley; Blue Rapids.
 Rogers, Ames Pattison; Abilene.
 Rogers, James Boyles; Larned.
 Rose, Robert Bell; Rosedale.
 Ruhlandt, Helen Hays; Osawatomie.
 Russell, Jean; Lawrence.
 Russell, Louise Hays; *Amarillo, Tex.*
 Sankee, Rachel Rebecca; Lawrence.
 Sawyer, Frances Holmes; *Kansas City, Mo.*
 Scott, James M.; Mankato.
 Sheets, Linnie Vaetta; Lawrence.
 Sheffy, Marion Sarah; Wichita.
 Shinn, Cora Jarloe; Lawrence.
 Shuey, Jennie Catherine; Natoma.
 Siever, Winifred Natalie; Wichita.
 Simons, Blance Louise; Lawrence.
 Smith, Agnes Eleanor; Seneca.
 Smith, Esther Louise; Welda.
 Smith, Mary Lucile; Lawrence.
 Soller, Dena A.; Washington.

Soxman, Don John; Lawrence.
 Sparr, Echo; Lawrence.
 Sprinkle, Lester Atchley; Topeka.
 Sproull, Cargill William; Lawrence.
 Stateler, Ernest Salathiel; Minneola.
 Steinhauer, Walter Donald; *Leavenworth.*
 Stevenson, Mary Ruth; Paola.
 Stockton, Marcellus Lowry; Gridley.
 Stofer, Dar Delos; *Kansas City, Mo.*
 Stoll, Elva Lucile; Lone Elm.
 Stotts, Grace Merle; Bonner Springs.
 Strong, Evelyn Robinson; Lawrence.
 Strong, George Eugene; Blue Rapids.
 Stubbs, Della Catharine; Lawrence.
 Swanson, Carl A.; McPherson.
 Swanson, Lillian Victoria; Marquette.
 Swearingen, Orpha Gladys; *Morrison, Okla.*
 Talbot, Frances Lucille; Lawrence.
 Testerman, Iva Bernice; Lawrence.
 Thomas, Edith Helen; Lawrence.
 Thomas, Edna Frances; Phillipsburg.
 Thompson, Janet Hammond; Whitewater.
 Traver, John Abram; Peabody.
 Trimble, Roy Ira; Sterling.
 Trinkle, Josie Margaret; Lawrence.
 Ulrich, Elizabeth Lucile; Lawrence.
 Upton, Mina; Rosedale.
 Utermann, Auguste Marguerite; Lawrence.
 Utermann, Marie Theresia; Lawrence.
 Van Horn, Amy Gladys; Lawrence.
 Waldo, Guy Lucian; Ellis.
 Walling, Artie Via; Lawrence.
 Walsworth, Laurance Alba; Lawrence.
 Wedell, Emilie; Lawrence.
 Whiteside, Lloyd Hammett; Lawrence.
 Williams, Sam George; Preston.
 Willmann, Edna Marie; Lawrence.
 Wolfe, James Edwin; Kingman.
 Woodruff, Marie; Lawrence.
 Wyland, Emma Frances; Harlan.
 Young, Earnest Edgar; Topeka.
 Young, Robert Alan; Bayneville.

JUNIORS, 277.

SOPHOMORES.

Abel, Clara Mildred; Ness City.
 Acre, Hebert Leonard; Wa Keeney.
 Adams, Frances Elizabeth; Lawrence.
 Alford, William Charles; Hazelton.
 Anderson, Eva Bell; Lawrence.
 Anderson, Gladys Camilla May; Lawrence.
 Anderson, Lind McKinley; Downs.
 Anderson, Willard Coe; Partridge.
 Arnold, Francis H.; Emporia.
 Arnold, James Winfred; Pratt.
 Anchar, Virgil Marion; Clay Center.
 Bagby, Howard; Lawrence.
 Bailey, Clarence Emmitt; *Ramona, Okla.*
 Baker, Bruce Hudson; Ellsworth.
 Beal, Homer; Topeka.
 Beck, Eugene H.; Winfield.
 Beckley, Grace; Lawrence.
 Bennett, John Benjamin; Pratt.
 Benton, Willard Merriam; Kansas City.
 Beverstock, Ruth Lanore; Lawrence.
 Bierer, Margaretta Louise; *Guthrie, Okla.*
 Bigelow, Dorothy Eugenie; Oberlin.
 Ritzer, Gladys Virginia; Lawrence.
 Black, Harold C.; Neodesha.
 Blain, Howard Wortham; Ottawa.
 Blair, Wayne C.; *Lecombe, Iowa.*
 Blurton, Nellie Florence; Bucklin.
 Bollinger, Elwin Fred; Mound Valley.
 Roman, Grace Ruby; Chanute.
 Boughton, Charles W.; Lawrence.
 Bowes, Leroy; Alma.

Bowlby, Alice; Natoma.
 Boyles, Bernice; Lawrence.
 Breakie, Allan Lenard; Lawrence.
 Brown, Clarence Charles; Cheney.
 Brown, Irma Rhea; Delphos.
 Brown, Joyce Adine; Olathe.
 Bryan, Jennie Maude; Waterville.
 Buchanan, Marie Estella; Lawrence.
 Buckles, Doyle Leon; Sedan.
 Buffington, Ralph Mulvaney; Ness City.
 Burks, Amos Lundy; Garden City.
 Bunker, Frances May; Alta Vista.
 Buntin, Jessie Muir; Scranton.
 Burgert, Eran Omer; Lawrence.
 Burkholder, Margaret Lucile; Marion.
 Butts, Madeline; Wichita.
 Campbell, John Charles; Lakin.
 Carey, John B.; Wichita.
 Cerman, Justice Neale; Herington.
 Carnie, Kathleen; *Kansas City, Mo.*
 Carr, Margaret Mather; Leavenworth.
 Carter, John Abell; Valley Falls.
 Champlin, Paul Bertrand; Canton.
 Chandler, Horace Frederick; Atchison.
 Chaplin, Gladys Albertina; Edgerton.
 Chapman, Ralph; Clay Center.
 Christenson, Olga Victoria; Stockton.
 Church, Harry Lester; Lawrence.
 Church, Romulus Bruce; Lawrence.
 Clapper, Mrs. Olive Ewing; Kansas City.
 Clark, Elizabeth Hallie; *Cherokee, Okla.*

SOPHOMORES—*continued.*

- Clark, Esther Mary; Chanute.
 Cole, Mrs. Dorothy Walker; Lawrence.
 Cole, Warren Henry; Clay Center.
 Collins, Lucile; Lawrence.
 Cook, Florence Louise; *Kansas City, Mo.*
 Cooper, Dewey Hobson; Spring Hill.
 Coover, Fred Luedde; Ellsworth.
 Corel, Gladys Fay; Lawrence.
 Cory, Eugenia Frances; Lawrence.
 Cotter, James Rachel; *Kansas City, Mo.*
 Cowgill, Elvyn Spencer; Lawrence.
 Cox, Harold Bernard; Cedarvale.
 Creager, Robert K.; McPherson.
 Crosley, David Vere; Cairo.
 Crowley, John J.; Lawrence.
 Crum, Raymond Huff; Downs.
 Curl, Chester L.; Osborne.
 Curry, Ralph Frey; Lawrence.
 DaMetz, George Pennell; Washington.
 Darby, Maurice Keith; Washington.
 Daum, Frieda; Lawrence.
 Davis, Donald Dwight; Downs.
 Davis, George Andrew; Scottsville.
 Davis, Mary Alice; Chanute.
 DeBenham, Harold LeDestine; Lawrence.
 De Mare, Mrs. Adeline Hunter; Lawrence.
 Dennis, Foster Leonard; Stockton.
 Dennis, Howard Olney; *Clovis, N. M.*
 Dent, Faye Marie; Oswego.
 Derge, David R.; Lebanon.
 Dickerson, Jennie Elizabeth; Peabody.
 Dieffenbacher, Clyde Charles; Cheney.
 Dielmann, Reta Hazel; Winfield.
 Dissinger, Gladys; *Kansas City, Mo.*
 Diver, Robert Warren; Lawrence.
 Dolbee, George; Lawrence.
 Dolecek, Edna Helen; Lawrence.
 Dolecek, Edward Elvin; Lawrence.
 Donaldson, John Allison; Garnett.
 Douthitt, Bessie Price; Lawrence.
 Dring, Louilla Ruth; Lawrence.
 Duncan, Mabel; *Perry, Okla.*
 Dunne, Marie V.; Wichita.
 Dyer, John Albert; Kansas City.
 Eastlake, Helen; *Kansas City, Mo.*
 Edmonson, Ellen; Newton.
 Edwards, Richard Dix; *Kansas City, Mo.*
 Eichenauer, Bertha; *Kansas City, Mo.*
 Ellis, Mary Josephine; Norton.
 Endacott, Ruth Beatrice; Lawrence.
 Epstein, Samuel Paul; *Bayonne, N. J.*
 Evans, Ralph W.; Leavenworth.
 Eytchison, Vivian Belle; Onaga.
 Fahringer, Stephen Martin; Lawrence.
 Firestone, Clifford Le Roy; Lawrence.
 Fisher, Frank Joseph; Kansas City.
 Fitzgerald, Linus Conrad; Lawrence.
 Fleson, Howard Tebbe; Sterling.
 Flintom, Lathrop Bullene; Lawrence.
 Fogarty, Katherine; Lawrence.
 Forsythe, Anna Elizabeth; Edgerton.
 Fox, Helen J.; Lawrence.
 Frank, Vernon H.; Jewell.
 Friend, Russell De Vere; Lawrence.
 Fritts, Ralph Victor; Paola.
 Frost, Arl Haskett; Hutchinson.
 Fuger, Golda Margaret; Wathena.
 Fulcrut, Vernon Davies; Norton.
 Fuller, Ilde Wilson; Lawrence.
 Gard, Blanche Alice; Iola.
 Gardiner, Ruth Bernice; Fredonia.
 Garman, Helen Rose; Lawrence.
 Gaskill, Gussie Esther; Lawrence.
 German, Walter Abel; Glen Elder.
 Giger, Harold Henry; Elmdale.
 Gillespie, Lester Alpine; *Tulsa, Okla.*
 Gillett, Josephine; Kingman.
 Glasco, Willard Martin; Piedmont.
 Glass, Glen Rinard; Topeka.
 Glens, Delwin Verne; Lawrence.
 Goldsworthy, Maude Edith; Lawrence.
 Good, Donald Cameron; Hiawatha.
 Gorrill, Clarence Marshall; Lawrence.
 Gott, Henry Vivion; Bronson.
 Gray, Helen Emily; Paxico.
 Griffiths, Arline; Lawrence.
 Grinstead, James Robert; *Pawhuska, Okla.*
 Groh, Joseph Peter; Wathena.
 Gurden, Wm. David; Topeka.
 Gustafson, Mary; Lawrence.
 Gwin, Lorena May; Lawrence.
 Hackerott, Agnes Marie; Osborne.
 Haddox, Charles; Lawrence.
 Hadley, Ernest Elvin; Alton.
 Hakan, Albert Joel; Kansas City.
 Hale, Earle Cadwill; Lawrence.
 Hamilton, Shirley Gonzalez; Lawrence.
 Hanscome, Marcella Morgan; Lawrence.
 Hardacre, James E.; *Kansas City, Mo.*
 Harper, Mabel Jane; Frankfort.
 Harris, Joseph Pratt; Windom.
 Hartly, Darald Loa; Kansas City.
 Harvey, Beatrice May; Lawrence.
 Havinghurst, Clarendon; Lawrence.
 Hawes, Ralph Edward; Wakefield.
 Hawkins, Ulista Alice; *Jasper, Mo.*
 Hay, Abraham Jones; Lawrence.
 Hege, Myrtle Marie; Sedgwick.
 Helmer, Sophia Bertha; Lawrence.
 Hendrickson, Floyd Chester; Dresden.
 Hcnson, Gurrie Ray; Englewood.
 Hertzler, Agnes Hancock; *Kansas City, Mo.*
 Hetler, Donald McKinley; Osage City.
 Hills, Dwight Moody; Chanute.
 Hilton, Willard Ordway; Cottonwood Falls.
 Hitchens, Nellie; Burlington.
 Hite, W. Blaine; Cherryvale.
 Hoag, Ruth; Garnett.
 Hobart, Charles Harrison; Topeka.
 Hoch, Frank Micheal; Wilson.
 Hodder, Margaret; Lawrence.
 Hoffman, Rheuben Alvin; Chanute.
 Hoffman, William Edwin; Lawrence.
 Holden, Harley Edwin; Neodesha.
 Hoss, Julia McBride; Cherryvale.
 Hostetler, Ruby Madelyn; Glasco.
 Houston, Blanche Marie; Bucyrus.
 Hunt, Homer Brett; Conway Springs.
 Hunt, Lois Mary; Conway Springs.
 Hurley, Gertrude Ellen; Leavenworth.
 Husson, Margaret Sabina; Kansas City.
 Hutton, Jack Gossett; Abilene.
 Ireland, Neal Dow; Florence.
 Jeter, Hugh; Alden.
 Jobs, Frances Mildred; *Kansas City, Mo.*
 Johnson, Anna Mary; Kingman.
 Johnson, Frederica Angela; Blue Rapids.
 Johnson, Gladys Mary; Concordia.
 Johnson, Howard Henry; Garnett.
 Johnson, Nellie Phyllis; Republic.
 Johnson, Retta Washburn; Hanston.
 Johnson, Thurston Leonon; McPherson.
 Johnson, William Scott; Lawrence.
 Jolly, D. Eber; Osage City.
 Jones, Richard; Leavenworth.
 Jones, Stanley Sherman; Lawrence.
 Joseph, Frances Marion; Whitewater.
 Kabler, Jesse Dickinson; Kingman.
 Kauder, Walter Ben; Halstead.
 Kauffman, Clyde LeRoy; Abilene.
 Kelley, Ruth Alice; *Independence, Mo.*
 Kendrick, Hazen; *Fort Smith, Ark.*
 Ketels, Marie; Lawrence.
 Kinkel, William Constant; Topeka.
 Klinck, Frances Marian; Hutchinson.
 Klock, Helmer Alfred; Lawrence.
 Kreeck, Charlotte Eloise; Lawrence.

SOPHOMORES—*continued.*

- Kriegh, Percival Stover; Lawrence.
 Krugg, Consuelo Virginia; Coffeyville.
 Kubik, Clara Mary; Caldwell.
 Kubik, Emily Clementis; Caldwell.
 LaCoss, Gertrude Martha; Lawrence.
 Lamb, Hester Marjory; Yates Center.
 Lamborn, Josephine Emma; Burlington.
 Lamme, Elizabeth; Hiawatha.
 Lane, Ruth Carrington; Lawrence.
 Langmade, Nina Salome; Oberlin.
 Larimore, Ogilvie Miller; Clifton.
 Laslett, Herbert Reynolds; Lawrence.
 Lauer, Albert Benjamin; Osage City.
 Levi, Ada Viola; Olathe.
 Levi, Laura May; Olathe.
 Liggett, Walter Roberts; Kansas City.
 Light, Mildred; Lawrence.
 Lingenfelter, Bonnie Matilda; Fredonia.
 Loewen, Otto Bismark; Newton.
 Lowry, John Emerson; Paola.
 Lynam, George; Moline.
 Mack, Inez; Luray.
 MacKinnon, Inez May; Kansas City.
 MacNaughton, Mabel Gertrude; Tonganoxie.
 Mannix, Winnifred; Overbrook.
 Markey, Della Donmyer; Minneapolis.
 Marshall, George H.; Lawrence.
 Martin, Francis Ivan; Douglass.
 Martin, Lillian Mae; Topeka.
 Maxwell, Uecil Seymour; Fort Scott.
 Means, Lucile Ingels; Hiawatha.
 Messick, Jessie Lea; Hill City.
 Metcalf, Ralph Hedges; *Kansas City, Mo.*
 Miesse, Lenore; Marion.
 Miller, Dorothy; Topeka.
 Miller, Emily Mary; Independence.
 Miller, Stella Vanera; Lawrence.
 Mitchell, Basil Lyman; Burlington.
 Montgomery, Harry Victor; Junction City.
 Moody, Minnie Elizabeth; Leavenworth.
 Moore, Raymond Irwin; Lawrence.
 Moore, Walter Roger; Olathe.
 Morgan, Harry Hill; Alta Vista.
 Mowrer, Ernest Russell; Lost Springs.
 Musson, Edith; *Norborne, Mo.*
 Myers, Mary; Lawrence.
 McBride, Ruea Diana; Lyons.
 McCaleb, Charles Garnett; *Bartlesville, Okla.*
 McClung, Thomas Orlando; Jewell.
 McCorkle, Enoch Harvey; Fort Scott.
 McCurdy, Henry Benson; Lawrence.
 McGinnis, Hugh Thornton; Aulne.
 McKee, Bruce E.; Lawrence.
 McKnight, Elda Marie; Hiawatha.
 McNeil, Pauline Sanford; Lawrence.
 McVey, Roy Vernon; Mt. Ida.
 Newman, Carl Sullivan; Dighton.
 Neylon, George Albert; Paola.
 Nicholson, Mary Morse; Newton.
 Nowlin, Lucile C.; Lawrence.
 O'Brien, Shamus; Lawrence.
 O'Leary, Dorman Henrichs; Lawrence.
 Palmer, Bernard Damian; Paola.
 Palmer, Gertrude Octavia; Lawrence.
 Parrish, Madge Marcella; Lawrence.
 Patrick, Ruth; Randall.
 Pattinson, Darwin G.; Lawrence.
 Pedroja, Mary M.; Lawrence.
 Percival, Harry Farlorn; Arkansas City.
 Petterson, Edward Chester; Beloit.
 Phenicie, Edith Anna; Tonganoxie.
 Pinkston, Paul Edwin; Independence.
 Plank, Elizabeth; Lawrence.
 Plank, Opal Marie; *Kansas City, Mo.*
 Poindexter, Early Whitten; Kansas City.
 Porterfield, Lois Myrtle; Holton.
 Price, Edwin Fletcher; Wellington.
 Probst, Mary Gray; Arkansas City.
 Querfield, Dorothy Jessie; Lawrence.
 Rayburn, Myrtle Francis; El Dorado.
 Raymond, Walter Archie; Rago.
 Reding, Katherine Prue; Lawrence.
 Reid, Elsie; Norcatur.
 Reinhart, James A.; Parsons.
 Rice, William Ivan; Lawrence.
 Richards, Lucy Carney; Minneapolis.
 Richmond, Alfred B.; Lucas.
 Richter, Theodore Henry; Alma.
 Richard, Marjorie Adeline; Lawrence.
 Riggs, I. B.; Muscotah.
 Riley, Don; Sabetha.
 Rinker, Harry Monroe; Ogellah.
 Roberts, Harold Moore; Greensburg.
 Roberts, Mary Frances; Lawrence.
 Robertson, Robert Lorin; Lawrence.
 Robinson, Gladys Josephine; Chanute.
 Robinson, Guy Chapman; Kansas City.
 Robinson, Helen Barger; Salina.
 Robinson, Roscoe John; Tescott.
 Rockey, Mildred Jeanette; Lawrence.
 Rogers, Annie Isabel; Lawrence.
 Rogers, Lena Edith; Wellington.
 Roop, Celia Esther; Abilene.
 Rowe, Sarah Odessa; Lawrence.
 Ruble, Mirl Calvin; Parsons.
 Rummel, Emma May; *Independence, Mo.*
 Russell, Cora Thurza; *Amarillo, Tex.*
 Schenck, Fred Gerald; Burlingame.
 Schmidt, Paul Wagner; Junction City.
 Schmutz, Henry Laurel; Chanute.
 Schreiber, Fred Carl; Leavenworth.
 Schwarz, Josephine Marie; Wilson.
 Scott, Ethel; Columbus.
 Scott, Iva Essie; Solomon.
 Selig, Mary Frances; Lawrence.
 Shane, William Kenneth; Lawrence.
 Shelley, Harold John; Elmdale.
 Simmons, Adda; Hutchinson.
 Skinner, Frances Marie; Columbus.
 Skinner, Hazel; Garden City.
 Slaven, Eulalia Hazel; Glen Elder.
 Smith, Guido Elwyn; Colby.
 Smith, Harry Merle; Bucklin.
 Smith, Irene; Holt.
 Smith, Leland Alexander; Solomon.
 Smith, Mary Ellen; Pleasanton.
 Smith, Polly Margaret; Lawrence.
 Smith, William Robert; Eudora.
 Smith, Wint; Mankato.
 Soper, Gail Raney; Hutchinson.
 Spalding, Wilber Braden; Wabaunsee.
 Spangler, Frank LeRoy; Lecompton.
 Spencer, Ray Paul; Lawrence.
 Sperry, Charles Carlisle; Beverly.
 Spicer, Miriam Russell; Lawrence.
 Spreier, Amy; Pawnee Rock.
 Spurrier, Mayme; Kiowa.
 Starrett, Ellis Lanbengayer; Norton.
 Stephens, Brooks Palmer; Kansas City.
 Sterling, Lucile; Lawrence.
 Stevens, Roy Ulysses; Norton.
 Stevenson, Edward; Lawrence.
 Stevenson, Harriet Maude; Lawrence.
 Stevenson, Margaretta Price; Leavenworth.
 Stuewe, Ferdinand Charles; Alma.
 Stunz, Mary Gladys; Edgerton.
 Sturgeon, Vivian Virginia; *Thomas, Okla.*
 Sullivan, Bradley; Mt. Hope.
 Swanson, Edna Elvira; Marquette.
 Swanson, John Frederick; Marquette.
 Tappan, Helen Mae; *Kansas City, Mo.*
 Tarrant, Thomas Oliver; Florence.
 Taylor, Marvin Daniel; Moran.
 Teitzel, Hazel Louise; Junction City.
 Thiele, George Henry; Washington.
 Thomas, Ruth Laura; Lawrence.

SOPHOMORES—*continued.*

Thompson, Ina Theo; Marion.
 Thompson, Willard Curtis; Marion.
 Thompson, Wiley Lane; Lawrence.
 Tihen, Irene Beatrice; Andale.
 Timmins, Vaughn Earl; Kansas City.
 Todd, John Edward; Lawrence.
 Tomlinson, Lydia; Independence.
 Totten, Orpha M.; Beattie.
 Towers, William Henry; Kansas City.
 Trant, Sara; Edwardsville.
 Treweeke, Richard Lewis; Wichita.
 Tucker, Dorothy; Lawrence.
 Uhl, Mignonette; *Carthage, Mo.*
 Van Arsdale, Mary Evangeline; Lawrence.
 Van Cleff, Charles E.; *Oklahoma City, Okla.*
 Veatch, Harry John; Weir City.
 Wallis, Herman Neal; Williamsburg.
 Wann, Wilfred Curtis; Hays.
 Wattles, Warren Fay; Wichita.

Webster, Paul Reichert; Larned.
 Wedd, Helen Frances; Lenexa.
 Weidlein, Nellie; Lawrence.
 Weigand, Herman; La Crosse.
 Weltmer, Wardie Wallace; Smith Center.
 Wheeler, Thomas Luther; Lawrence.
 White, Will Nathan; Lawrence.
 Whitehead, Ennis Clement; Westphalia.
 Wilhelmsen, Karl John; Kansas City.
 Wilson, Ivan Fernando; Lawrence.
 Wilson, Hazel Emelyn; Lawrence.
 Wilson, La Vern; Louisburg.
 Wilson, William Henry; Lawrence.
 Windett, Florence Lord; Quenemo.
 Windsor, Grace; Lawrence.
 Winey, Harold Hinman; Lawrence.
 Wise, Monona Deards; Lawrence.
 Youmans, Winona A.; Osawatomie.

SOPHOMORES, 412.

FRESHMEN.

Acre, Joseph; Collyer.
 Albach, Robert Henry; Lawrence.
 Allen, Clara Louise; La Cygne.
 Allen, Katherine Margaret; Olathe.
 Allen, William Harry; Columbus.
 Anshutz, William Wallace; Meade.
 Arbuthnot, Sidney Earl; Belleville.
 Arend, Harold Dermont; Downs.
 Ashby, John Walter; Coffeyville.
 Atkinson, Eleanor Frances; Lawrence.
 Auswald, Elizabeth Frances; Kansas City.
 Babcock, Wealthy Consuelo; Hollenberg.
 Bachman, Merit Earl; Protection.
 Bagby, Grace; Lawrence.
 Baird, George Marion; Formoso.
 Baker, Helen Eugenia; Wichita.
 Balch, John Henry; Syracuse.
 Bales, Elsie Ruth; Lawrence.
 Balmer, Burney Jerome; Woodston.
 Banks, Edith Olive; Independence.
 Barbo, Ruby Cecelia; Lenora.
 Barger, Esther Virginia; Beloit.
 Barnard, Edith; Madison.
 Barnd, Richard; Ness City.
 Barnes, Howard Otho; Moran.
 Barnes, Russel Bryan; Baxter.
 Barbo, Ruby Cecelia; Lenora.
 Bastgen, Ruby Marie; *St. Joseph, Mo.*
 Bauerlein, John Henry; Topeka.
 Baty, Marcia Stanhope; Lawrence.
 Beal, Mary Letitia; Hamilton.
 Beeson, Frank Archie; Lawrence.
 Bell, Kenneth G.; Colliss.
 Bell, Rachel Elizabeth; White Cloud.
 Bender, Vere William; Parsons.
 Benson, Annie Victoria; *Essex, Conn.*
 Biggs, John Philips; Barnard.
 Birch, Albert Ellis; Lawrence.
 Blair, James Stuart; Lawrence.
 Bloom, James Britton; Pawnee Rock.
 Blount, Justin Alexander; Larned.
 Bocoock, Victor Arnold; Cottonwood Falls.
 Booe, Cecil Morgan; Chanute.
 Boutwell, Charlotte F.; Lawrence.
 Bozell, Lola May; Beloit.
 Bradley, Elmer Holmes; Pleasanton.
 Brady, Agnes Marie; Lawrence.
 Branine, Alden Ezra; Newton.
 Bretherton, Vivian R.; *Portland, Ore.*
 Bridenstine, Orville Bland; Wichita.
 Briggs, Esther Olive; Alta Vista.
 Brindle, Paul James; Kansas City.
 Brinton, Lola Mae; Mankato.
 Brooker, Robert Paul; Peabody.
 Brown, Bessie Alice; Englewood.
 Brown, Clara Marie; Lawrence.

Brown, Karl; Spearville.
 Brown, Marian Cecil; Argentine.
 Brown, Ravena Elizabeth; Lawrence.
 Brown, Zetella Wyona; Kansas City.
 Browne, David Lisbon; Norton.
 Browne, Mary Marilla; Norton.
 Broyles, Watkins Andrew; Bethany.
 Bruckmiller, Elfrieda Otilia; Lawrence.
 Brush, Percy Pierson; Lawrence.
 Bryant, Harry Victor; Frankfort.
 Buchanan, Dwight Varsar; Lawrence.
 Buck, Jessie Lucile; Paola.
 Bunker, Susie; Alta Vista.
 Burkholder, Edwin Vernon; Marion.
 Burrough, Victoria A.; Kansas City.
 Burt, Roy Everett; Lawrence.
 Burwell, Keene C.; *Oklahoma City, Okla.*
 Busenbark, Beryl; Lawrence.
 Butler, Florence Vale; Lawrence.
 Button, Dorothy Maude; Burrton.
 Campbell, Robert Finley; Meade.
 Canavan, Lila Marguerite; Lawrence.
 Carey, Walter Ray; Osage City.
 Carnie, Elizabeth Ewing; *Kansas City, Mo.*
 Carper, Charles Clay; Lawrence.
 Carter, Maude Ellen; Tonganoxie.
 Carter, Millie Field; Lawrence.
 Casey, Joseph D.; Norton.
 Castle, Marjorie; *St. Joseph, Mo.*
 Caudill, Clyde F.; Protection.
 Chaffee, Myrtle; Marysville.
 Chambers, Adelbert R.; Tescott.
 Chambers, Helen Louise; Lawrence.
 Champlin, Benjamin Dwight; Canton.
 Chapman, Helen; Kansas City.
 Chappell, Frank Tilbert; *Newkirk, Okla.*
 Chappell, Gilbert Rufus; Lawrence.
 Charles, Cora Belle; Stafford.
 Charles, Roscoe Chauncey; Stafford.
 Cissna, Arnstina; Fort Scott.
 Clark, Helen Eugenia; *Kansas City, Mo.*
 Clark, Roy Henry; Lawrence.
 Clark, William Dorman; Utica.
 Clements, Paul Eugene; Peru.
 Cloninger, Hugh Postell; Ottawa.
 Cludas, Averill Belmont; Minneapolis.
 Conklin, Tracy R.; Abilene.
 Connelly, John Vernon; Colby.
 Constant, Lucian Lee; Belle Plaine.
 Cook, Clarence Rolland; Junction City.
 Cook, Charles Harold; Wichita.
 Cooper, Lloyd Frank; Hoxie.
 Coors, Elizabeth; *E. Las Vegas, N. M.*
 Cornelius, Laura Anne; Harper.
 Courtney, Blanche A.; *Darkesville, Iowa.*
 Courtney, William Edwin; Lawrence.

FRESHMEN—continued.

Cox, Hubert Donald; Cedarvale.
 Oox, Wilfred; Sharon Springs.
 Craven, Bessie Evelyn; Summerfield.
 Crawford, Arthur Clyde; Lyndon.
 Crawford, Lewis Nelson; Sedan.
 Creech, Jesse Orrin; Lawrence.
 Creek, Olive May; *Kansas City, Mo.*
 Creek, William Perry; Lawrence.
 Cromwell, Harry Hardin; Belle Plaine.
 Crooks, Lloyd McKinley; Altoona.
 Crooks, Marjorie Elma; *Kansas City, Mo.*
 Cross, Joseph, Burns; Garnett.
 Crowder, Leslie Earl; Buffalo.
 Cubbison, James Ken.; *Kansas City.*
 Curtis, Charles Havelock; Marion.
 Danglede, Clara Louise; *Webb City, Mo.*
 Darby, Raymond V.; Washington.
 Darling, Russell C.; *Oklahoma City, Okla.*
 Davis, Kenneth Albert; Morganville.
 Davis, Orville D.; *Asbury, Mo.*
 Day, Bernice Bel; Alta Vista.
 Day, Willard Leslie; Abilene.
 Dean, John Sullivan; Topeka.
 Deibel, Maria; Lawrence.
 DeMoss, Emma Fay; Lawrence.
 Demuth, Howard B.; Ellsworth.
 DeWald, Martha; Russell.
 DeWitt, Helen Wright; *Kansas City.*
 DeWolf, Henry Franklin; Garnett.
 Dimond, Beatrice Elizabeth; Wichita.
 Dixon, Claude Frank; Kiowa.
 Dodderidge, Faye; White City.
 Drake, Gladys Edith; Fort Scott.
 Drury, Ray V.; Newton.
 Dunmire, Camilla Ruth; Lawrence.
 Dunnett, Phyllis Lucinda; Lawrence.
 Durnell, Orena; *Joplin, Mo.*
 Duttweiler, Mattie May; Hartford.
 Dyer, Eugene Thomas; *Kansas City.*
 Eastlake, Marion; *Kansas City, Mo.*
 Easton, Charles Gerald; Winchester.
 Edgar, Lucile Anna; Lawrence.
 Eggleston, Edward Earl; McLouth.
 Elder, Raymond B.; Mankato.
 Eldridge, Paul; *Dewey, Okla.*
 Elliott, Dempsey Walter; Lawrence.
 Elliott, Jeannette Herriott; Lawrence.
 Ellis, Marjorie Dana; Medicine Lodge.
 Ellis, Otto; Lawrence.
 Emmons, Fern Ora; Lawrence.
 Engel, Herman Busch; Lawrence.
 Engle, Viola; Abilene.
 Evans, Lester James; *Clovis, N. M.*
 Evans, Wade Hampton; Wa Keeney.
 Fairchild, Margaret; Hiawatha.
 Farris, Ruth Antoinette; *Guymon, Okla.*
 Farris, Ivan Leo; Norwich.
 Fearing, Olin Kyrle; Burr Oak.
 Feder, Will Russell; Topeka.
 Feierabend, Frank Leo; Atchison.
 Ferris, Emily Harriet; Hoisington.
 Fish, Lillian V.; Lawrence.
 Fitzpatrick, James Earl; Lawrence.
 Fletcher, Zell; Preston.
 Flint, Dorothy; Girard.
 Fogarty, John Lee; Junction City.
 Folsom, Marie Etta; Lawrence.
 Forbes, Helen Marguerite; Concordia.
 Foster, Edward Swanson; Carbondale.
 Foster, Fern Lucile; Atwood.
 Foster, Lewis Chandler; *Kansas City, Mo.*
 Foster, Susan Estella; Sedgwick.
 Fowden, Irene Kemble; *Dewey, Okla.*
 Fowler, Melvin Eugene; Merriam.
 Freese, Esther; Lawrence.
 Frick, Gage Carlin; *Kansas City, Mo.*
 Frizzell, Bertrand Errol; Halstead.
 Fulkerson, Katharine; Lawrence.
 Funk, Hugh Shepard; Liberal.
 Furney, Eunice; Alta Vista.
 Furse, Nanne Margaret; Kinsley.
 Furse, Vera Lazelle; Kinsley.
 Gafney, Ray E.; Winfield.
 Gardner, Ward Alvinza; Greenleaf.
 Garrett, Justinian Tennyson; Leavenworth.
 Garrison, Joseph Russell; Garnett.
 Garvin, Vera Margaret; Lawrence.
 Gibson, Ruth Muriel; Arrington.
 Gill, Walter M.; Lawrence.
 Gillenwater, Archie; Weir.
 Gillispie, Imogene Marion; *Kansas City.*
 Gillock, Frances Eugenia; Fort Scott.
 Gilmore, David Samuel; Sabetha.
 Gilmore, Mary; Fredonia.
 Gingrich, John Edward; Dodge City.
 Gordon, Maybelle Inez; Lawrence.
 Goss, Clark Cleo; Harper.
 Gowens, Ura Lee; Haviland.
 Graham, Norruth Dilley; Hiawatha.
 Graham, Roy William; *Walters, Okla.*
 Gray, George; *Kansas City.*
 Green, Ethlyn; *St. Joseph, Mo.*
 Greenlees, Lois Ann; Lawrence.
 Gregory, Dwight Omar; Alton.
 Gregory, Harold Van Voorhis; Coffeyville.
 Griffith, William Henry; Pratt.
 Grinter, Edith Heis; *Kansas City.*
 Guild, Ruth Evelyn; Topeka.
 Haines, Howard Wright; Baxter Springs.
 Haines, Lucile Pearl; *Enid, Okla.*
 Hake, Edwin Carl; Minneapolis.
 Hall, Stella Gertrude; Neodesha.
 Hampson, Dora Lucile; Fredonia.
 Hangen, Herman Cecil; Wellington.
 Harlan, Vera May; Wa Keeney.
 Harrington, Roscoe Samuel; Augusta.
 Harrison, William Henry; Downs.
 Hart, Margarette Adalyn; *Raton, N. M.*
 Harvey, Randal Cone; Topeka.
 Hassig, Cecil Edwards; *Kansas City.*
 Hay, Laurence Charles; Paola.
 Heathman, Lucy; Lawrence.
 Hemphill, Raymond Porter; *Kansas City, Mo.*
 Henderson, Ernest Everett; Leonardville.
 Hereford, Melvin; Marion.
 Herley, Ernest Bryan; Lowement.
 Heron, William Thomas; Burns.
 Hershey, Noah Lincoln; Abilene.
 Heter, Georgia; Lawrence.
 Hill, Ethel Marian; Lawrence.
 Hillman, Ile Effie; Glen Elder.
 Hilton, George Aaron; Washington.
 Hilton, Mary Amanda; Washington.
 Hitchcock, Frances Lee; Augusta.
 Hite, Woodard Vannos; Cherryvale.
 Hobart, Harold Nelson; *Kansas City, Mo.*
 Hoff, Grace Elizabeth; Lawrence.
 Hogue, Hobart Anderson; Olathe.
 Hohn, Nellie Doris; Marysville.
 Holloway, Richard Black; Lawrence.
 Horr, Worthie Harold; Troy.
 Horton, Martha Ruggles; Argonia.
 Hostetter, Marie Miller; Lawrence.
 House, Harold Merwin; Douglass.
 Houston, Harry Harold; Bucklin.
 Hovey, Jessie Lucile; *Kansas City.*
 Hughes, Lawrence Dwight; Lawrence.
 Hunt, Meriel M.; Florence.
 Huntington, Forrest William; Lawrence.
 Huntington, Mrs. Vivian Belle; Lawrence.
 Hutton, John Ralph; Lakin.
 Hyer, Albert Edward; Olathe.
 Ingham, Florence Mae; Fort Scott.
 Inglefield, Charles Clinton; Independence.
 Irwin, Harold Martin; Anthony.
 Jackson, Earl Sumner; *Kansas City.*
 Jackson, Frieda Neola; Topeka.

FRESHMEN—*continued.*

- Jackson, Helen Burtiss; Lawrence.
 Jacobs, Elijah Lawrence; McCune.
 Jenkins, Elmer Lawrence; Cherokee.
 Jensen, Bernard Francis; Emporia.
 Johnson, Catherine R.; *New Rochelle, N. Y.*
 Johnson, Emsley Thomas; *Thomas, Okla.*
 Johnson, Eva Blanche; Irving.
 Johnson, Morris; Salina.
 Johnson, Myron Libby; Leavenworth.
 Johnson, Samuel Chester; Eureka.
 Johnston, Hermon Tipton; Lakin.
 Jones, Henry Clarence; Leavenworth.
 Jones, Morris Burdette; Cedar Vale.
 Jones, Ross Donald; *Kingfisher, Okla.*
 Jordan, Hubert Wilson; Seneca.
 Jordan, Issac Newton; Mankato.
 Jordan, Mayme Geraldine; Glasco.
 Judd, Marion Helen; Dodge City.
 Katzenberg, Sallye Helen; Kansas City.
 Keck, Kenneth Fielman; *Wapello, Iowa.*
 Keeler, Guy Vernon; Scottsville.
 Keeler, Walter James; Lawrence.
 Keeling, Dolores B.; Fort Scott.
 Kelly, Dorothy Lillian; Iola.
 Kennedy, Julia Alice; Fort Scott.
 Kennedy, Leta Fern; Lawrence.
 Kerchner, Jess King; Concordia.
 Kimball, Pauline; Neodesha.
 Kimmel, Forrest Walter; Morrill.
 Kirchner, Harold Robert; Kansas City.
 Kirkendall, Ethel Anita; Natoma.
 Kirkendall, Ivah Mae; Natoma.
 Kistler, John Joseph; Alta Vista.
 Klein, Randall Thomas; Wichita.
 Klippel, Philip Chester; Hutchinson.
 Korb, John Herman; Fairmount.
 Kreider, Karl McKinley; Lawrence.
 Krumbach, John A.; *Shelby, Neb.*
 Laing, Harlow Emerson; Kansas City.
 Laing, Harold Raymond; Kansas City.
 Landon, Charles Earl; Mayetta.
 Landon, Ira; Mayetta.
 Laslett, Howard; Lawrence.
 Law, Seaton Marcellus; McPherson.
 Lawrence, Louis William; Lawrence.
 Lee, Frank Nelson, Kansas City.
 Lee, Ruby Irene; Wichita.
 Leibengood, Nelle; Paola.
 Lesh, Corinne; Arkansas City.
 LeSeur, Marion Barnes; Pratt.
 Levi, Philip Lewis; Kansas City.
 Lind, Lloyd Latour; Leonardville.
 Lindley, Edna Fuller; Lawrence.
 Lindley, Georgia Elizabeth; Lawrence.
 Lips, Charles Starak; Atchison.
 Lobaugh, Farel Roy; Washington.
 Longenecker, Harold John; Lawrence.
 Loren, Frank Julius; Atchison.
 Loveless, Verne; Wetmore.
 Lowrey, James B.; *Excelsior Springs, Mo.*
 Ludeman, Frances Margaret; Anthony.
 Lundstrom, Frederick Niles; Little River.
 Luse, Elgie; Easton.
 Lyne, James Garnett; Herington.
 Lyon, Dandridge; Augusta.
 Lyon, Garrett Brown; Augusta.
 MacClement, Zwingle; Olathe.
 Mack, Irene Esther; *Kansas City, Mo.*
 Madison, Marguerite; Dodge City.
 Magers, Henry Brady; Winchester.
 Mairs, Tom; Kinsley.
 Maloy, Eva Helene; Eureka.
 Manson, Alyce Isabel; McCune.
 Marshall, Earl Edwin; Elk City.
 Marshall, Grace; Fort Scott.
 Marshall, Hal Ellsworth; Elk City.
 Martin, Eugene Rhodes; Liberal.
 Martin, Frances; Lawrence.
 Martin, Hazel Iva; Lawrence.
 Martin, Raphael Lynn; Brookville.
 Martin, Rebecca; Garnett.
 Martin, Robert Elmer; Stafford.
 Martin, Wilfred Everette; Lawrence.
 Martling, Frances Hodgen; Kansas City.
 Mason, Edward Sagendorph; Lawrence.
 Matticks, Winifred Helen; *Kansas City, Mo.*
 May, Elmer Lawson; Hutchinson.
 Meadows, Pety B.; Gaylord.
 Mee, Herbert Martin; *Oklahoma City, Okla.*
 Melville, Marguerite Vera; Eudora.
 Mendenhall, George Lester; Gove.
 Mendenhall, Richard Harlan; Gove.
 Meyer, Claude Leroy; Effingham.
 Miller, Lester B.; Welda.
 Miller, Myron Cope; Anthony.
 Milton, Gilbert Ashby; Kansas City.
 Miner, George Herbert; Chase.
 Miner, Jean Walter; Burlingame.
 Minor, George Edward; Lawrence.
 Minturn, Benjamin Earle; Florence.
 Mitchell, Bennie; Severy.
 Mitchell, Margaret Helen; Lawrence.
 Montague, Josephine May; Washington.
 Montgomery, George A.; Mankato.
 Montgomery, John Alexander; Lawrence.
 Moore, Esther H.; Hutchinson.
 Moore, Maude Irene; Lawrence.
 Morgan, Louis Schubert; Arkansas City.
 Morrison, Mary Jane; Newton.
 Moxley, Harry Forrest; Osage City.
 Murphy, John Damian; Perth.
 Murphy, Paul Carter; Tonganoxie.
 Musick, Nora Jane; Howard.
 Myers, Caroline; *Shawnee, Okla.*
 Myers, Ralph Maness; Alden.
 McBratney, Edyth Mae; Centralia.
 McCabria, Harry Gentry; Eudora.
 McCall, Fanny Virginia; Hiawatha.
 McCamish, Dorothy Lee; Kansas City.
 McCandless, Orville Calnon; Wichita.
 McClure, Edna Fouts; Arkansas City.
 McConnell, William Howard; Lawrence.
 McCreath, David Gentry; Lawrence.
 McDonald, Ira Malcolm; Lawrence.
 McDowell, Carroll; Arkansas City.
 McIntosh, Fred Eben; Burns.
 McKinney, Helen Julia; Iola.
 McMeel, Anna Elizabeth; Meade.
 McMillan, Sadie; Lawrence.
 McNalley, Anna Rose; Michigan Valley.
 McNalley, Joseph Edward; Michigan Valley.
 McPherson, Earl Waldo; Lawrence.
 Naismith, Helen Caroline; Lawrence.
 Naismith, Margaret Mason; Lawrence.
 Nelson, Allene Marie; Lawrence.
 Nelson, Iril; Lawrence.
 Nixon, Louise Aldrich; Concordia.
 Nodurft, Mrs. Lula Lucile; Lawrence.
 Noel, Sidney Quinn; Glasco.
 Nudson, Uri Sheridan; Garrison.
 Ogg, William Raymond; Lawrence.
 Olander, John Willard; *Kansas City, Mo.*
 Osborn, Edward Ray; Virgil.
 O'Toole, Albert Thomas; Bonner.
 Owens, Seth Jenkins; Effingham.
 Palmer, Beatrice Ventura; Hutchinson.
 Palmer, Everett T.; Jewell.
 Parkinson, Marina J.; *Fort Smith, Ark.*
 Parmenter, Alva Jane; Kingman.
 Patterson, Elsie Fay; Abilene.
 Paul, Neil Archie; Randall.
 Pearson, Walter Theodore; Washington.
 Peek, Milton Leroy; Arkansas City.
 Pence, Lulu Helen; Baldwin.
 Pennkamp, Pauline Elizabeth; Kansas City.
 Penwell, George Harvey; Larned.

FRESHMEN—continued.

- Perkins, Marguerite Aileen; Lawrence.
 Perkins, Oscar Floyd; Meade.
 Peters, Hazel Arissa; Lawrence.
 Phinney, Helen Lucille; Oskaloosa.
 Piehler, Elmer; Alden.
 Pipkin, Emily Jo; Lawrence.
 Pitt, Mildred Clara; *Kansas City, Mo.*
 Plank, William Ewart; Lawrence.
 Potter, Edna Haydon; Ashland.
 Potter, Mamie Belle; Frankfort.
 Potucek, Louis Eugene; Portland.
 Pratt, Esther Beryl; Rossville.
 Pratt, Joe J.; *Appleton City, Mo.*
 Preble, Fred Clarence; Hutchinson.
 Preder, Vera Musetta; Atwood.
 Pringle, James Thomas; Alma.
 Pugh, Clifford Henry; Junction City.
 Pumroy, Lorna Irene; *Pawnee, Okla.*
 Ramsey, Mabel Ester; Garnett.
 Randall, Charles Bromfield; Lawrence.
 Rankin, Earl Francis; Lawrence.
 Rannie, Paul Rusal; Lawrence.
 Reckards, Estella Isabelle; Ozawkie.
 Keed, Cameron Groh; *Kansas City, Mo.*
 Reeves, Ray McCarter; Dodge City.
 Reitz, Harlie Stephen; Morrill.
 Reitzel, Dean Heaton; *Beatrice, Neb.*
 Renner, Marion John; Lawrence.
 Reynolds, Olive; Holton.
 Rhue, Gilbert Ray; Troy.
 Rice, Gladys; Lawrence.
 Richardson, Hermania M.; Lawrence.
 Richardson, Homer Henry; Savonburg.
 Rinehart, Hattie; Lawrence.
 Ritter, Cecil Henry; Clifton.
 Robinson, Eva; Minneapolis.
 Robson, William Bonjour; Wamego.
 Rogers, Whitson Golton; Wellington.
 Roop, Charles William; Abilene.
 Röss, Carl; Lawrence.
 Rouse, Ruth Mary; Wichita.
 Rowton, Wilmer Harvey; Cimarron.
 Rudolph, Ruth Wilma; Lawrence.
 Rustenbach, Fred; Fredonia.
 Sacher, Carl Harry; Holton.
 Sage, Ruth Agnes; Topeka.
 Salvesen, Floyd Wilson; Lawrence.
 Sandberg, Dorothy May; *Kansas City, Mo.*
 Sandow, Arthur Robert; Dillon.
 Sawyer, Christian Earl; Morrowville.
 Scanland, Granville Elmer; Randall.
 Schall, Nellie May; Lawrence.
 Schell, Oliver W.; Lawrence.
 Schenck, Mina Margaret; Burlingame.
 Schnitzler, Fritz William; Wichita.
 Scott, Herbert Willie; Independence.
 Scott, James Armstrong; Kansas City.
 Scott, Naomi Henrietta; Kansas City.
 Segelbaum, Rose Bertha; Kansas City.
 Selig, August Lewis; Lawrence.
 Shaw, Frederick Maurice; Holton.
 Shearer, Martin Pierce; Junction City.
 Sheets, Jane; Lawrence.
 Shelton, Roy Miller; Oneida.
 Shepherd, Gertrude; Kansas City.
 Sherman, Charles Glenn; Protection.
 Shinn, Rhoda Marinda; Burrton.
 Shogrin, Arthur Clifford; Fowler.
 Shrader, Percy William; McLouth.
 Sibbett, Charlie Roger; Protection.
 Simon, Carl Ludwig; Preston.
 Simpson, James Albert; Salina.
 Sitzler, Emma Lois; Lawrence.
 Skaer, Howard Arthur; Augusta.
 Sloop, Ernest Wesley; Lyndon.
 Smiley, Stanton Lambert; Wilder.
 Smith, Burton Esby; Marion.
 Smith, Dwight Melvin; Wichita.
 Smith, Eldon Bridges; Hutchinson.
 Smith, Frederick Harold; *Kansas City, Mo.*
 Smith, Hazel Lucile; Lawrence.
 Smith, Mary; Abilene.
 Smith, Nellie Virginia; Lawrence.
 Smith, Vera Blake; Sharon.
 Smithmeyer, Matilda Emma; Lawrence.
 Sowers, Marguerite Anna; Bonner Springs.
 Soxman, Guy Everett; Lawrence.
 Speck, Maude Charles; *Kansas City, Mo.*
 Spencer, Lucene Allen; Iola.
 Stalder, Roy Frederick; Morrill.
 Stanley, George Bowman; Lawrence.
 Statton, Dot Emerson; Lexington.
 Stratton, Helen Irene; Lawrence.
 Steckel, Marie; Ellinwood.
 Stephenson, Julian Rawlings; Pleasanton.
 Stevenson, Ferne; Lawrence.
 Stewart, Vera Florence; Burr Oak.
 Stickler, Hugh Madison; Arkansas City.
 Still, Jeannette Selder; Tonganoxie.
 Stillwell, Robert Jerry; Kansas City.
 Strange, Vivian Naomi; Perry.
 Stryker, Frederick Fillmore; McAlister.
 Sturtevant, Ira Albert; Topeka.
 Suberkrup, Paul Henry; Leavenworth.
 Sullivan, Elizabeth A.; *Kansas City, Mo.*
 Sutton, Harold Smith; Liberal.
 Swain, Percy Wendell; Soldier.
 Swanson, Caleb Vincent; Lindsborg.
 Sweet, Gilberta Duvall; Hutchinson.
 Swenson, Gilbert Oscar; Leonardville.
 Tarr, Grace Edna; Summerfield.
 Taylor, James Ross; Lawrence.
 Taylor, Mildred Aileen; *Kansas City, Mo.*
 Teeter, Clifford Loraine; Dodge City.
 Terrill, Harold James; Robinson.
 Tester, Allen Crawford; Coffeyville.
 Thiessen, Edward Herman; Beloit.
 Thomas, Charles Leonard; Humboldt.
 Thompson, Harry Frank; Arkansas City.
 Thorpe, Harold Judson; Lakin.
 Timken, Louis Bengeman; Bison.
 Torrey, Alden Hamilton; Kansas City.
 Transue, Elsie Belle; Summerfield.
 Traul, Ruth Irene; La Cygne.
 Troup, Judson; Logan.
 Troutfetter, Frank C.; Colby.
 Troutman, John Franklin; Kansas City.
 Tucker, Jack; Lawrence.
 Tucker, LeVerne; Cawker City.
 Underwood, Fay; Lawrence.
 Vaile, Amos Theodore; Lawrence.
 Van Velzer, Harry Leland; Fort Scott.
 Varner, Luella; Iola.
 Venning, Albert Jacob; Grenola.
 Vernson, Harry Walter; Blue Rapids.
 Voorhees, Claude Harold; Leavenworth.
 Waddell, Helen Catherine; Ottawa.
 Wade, Hazel Anna; Chanute.
 Wagstaff, Helen Elizabeth; Lawrence.
 Waitt, Mary Catherine; Wichita.
 Waldie, Mrs. Eva May; Lawrence.
 Walling, Lulu Grace; Lawrence.
 Walsh, Charles Albert; Beloit.
 Walters, Robert Kingsley; Abilene.
 Walton, Thomas Warden; *Butler, Mo.*
 Walz, Thomas Julius; Kansas City.
 Ward, Charles Edmund Dewey; Little River.
 Ware, Toll Rippey; Severance.
 Washington, Herschel Lawrence; Leoti.
 Wasson, Ruth Loraine; Leavenworth.
 Watkins, Charles Boyd; Blue Rapids.
 Wear, Millard Price; Topeka.
 Webb, Ora Louella; Lawrence.
 Weidlein, Glee Toews; Longton.
 Weissenborn, Walter; Kansas City.
 Welsh, Floyd Elnow; Lawrence.
 West, Genevieve; Lawrence.
 Westling, Ernest Carl; Marquette.

FRESHMEN—continued.

- Whitcher, Edith Frances; Concordia.
 White, Joe Nicholas; White Cloud.
 White, Marceo Antonio; Chanute.
 Whitehurst, Terrell; Kansas City.
 Wiggins, Gertrude; *Kansas City, Mo.*
 Willems, Leonard Carnody; Lansing.
 Williams, Anton I.; *Siloam Springs, Ark.*
 Williams, Frederic Calvin; *Canon City, Colo.*
 Williams, Harriett Leah; Preston.
 Wilson, Albert Edgar; Kinsley.
 Wilson, Alexander R.; Meade.
 Wilson, Allen Ditmars; Chanute.
 Windhorst, Freda; Belpre.
 Wohlgenuth, Robert Jacob; Washington.
- Wolley, Ruth; Liberal.
 Wooddell, Helen Boyd; Nickerson.
 Woods, Ruth Sarah; Burden.
 Woodward, Don Edward; Cheney.
 Woodward, George; Lawrence.
 Woody, Warren Vernon; Barnard.
 Woolsey, Darlene Elizabeth; Lawrence.
 Wulfekuhler, Eugene; Lawrence.
 Wullenwober, Irma Katharine; Harper.
 Wykoff, Ethel Augusta; Osborne.
 Youmans, Coyetta Bernice; Osawatomie.
 Young, Margaret; Fredonia.
 Young, Percy; Lawrence.
 Ziegler, Frederick McClain; Medicine Lodge.

FRESHMEN, 611.

SPECIALS.

* Enrolled in another school of the University.

- Adams, Gladys; Kansas City.
 Akright, James Gladstone; Sterling.
 *Alford, Eugene Davis; Leavenworth.
 *Allvine, Glendon; Kansas City.
 Amos, Thyrsa Wealtha; Spivey.
 Anderson, Livingston C.; Independence.
 *Bailey, Lucile; Lawrence.
 Baldwin, Mrs. E. J.; Lawrence.
 *Baldwin, Frank Clifford; Washington.
 *Ball, Bertus Clyde; *Mansfield, Tex.*
 *Barba, Eusebio Carbonell; Lawrence.
 *Barteldes, Elsa; Lawrence.
 *Bennett, Reuben George; Newton.
 *Bond, Llewellyn Jack; Washington.
 Bowman, Harry Bert; Baldwin City.
 *Bradley, Isaac Franklin; Kansas City.
 Brady, Leo Fred; Lawrence.
 Brownlee, Mary Angelina; Stafford.
 Burkhead, Carl Roscoe; Centerville.
 *Carter, James L.; Kansas City.
 *Carter, Marion Leslie; Howard.
 Cazier, Lawrence Wallace; Wakarusa.
 Childs, Anna Katherine; Kansas City.
 Clapper, Ray Lewis; Kansas City.
 Clark, Burney R.; Oberlin.
 Clawson, Benjamin J.; Lawrence.
 Clawson, Mrs. Vera Margaret; Lawrence.
 *Coe, Mabel; Topeka.
 *Coe, Fordyce Barker; *New York.*
 *Cook, Eugene Byron; Cherryvale.
 *Cory, Charles Henry; Parsons.
 *Craig, Halleck Irwin; Independence.
 Crawford, Cornelia Humphrey; Girard.
 *Crowley, William J.; Kansas City.
 *Darrah, Samuel James; McPherson.
 *Davenport, Ross; Kansas City.
 Davis, Charles Ambrose; Clay Center.
 *Day, Hazel; Canton.
 *Dittmer, Otto H.; Independence.
 *Douglas, Arthur Lloyd; Crestline.
 Ducommun, Mark; Lawrence.
 Dykes, Ada; Lebanon.
 *Dykes, John Henry; Lebanon.
 Fitch, Burdette M.; Delphos.
 *Foster, William Henry; *Kansas City, Mo.*
 Fox, Ruth Elyda; Lawrence.
 Frame, Ethel Lovey; Bonner Springs.
 Frederick, Margaret A.; Bonner Springs.
 *Frost, Austin; Lakin.
 Fuller, Clinton Charles; Peabody.
 *Geiger, John Edwards; Syracuse.
 Gillett, Wilbur Goodson; Kingman.
 Golden, Reed Hollister; Kensington.
 *Goppert, Ernest John; Belleville.
 Grammon, Winfred Nazair; Lucas.
 Grange, Norma Sherman; Lawrence.
 Green, Stanley L.; Lawrence.
 *Greever, Paul R.; Lansing.
- Grinter, Phyllis Josephine; Lawrence.
 *Gruver, Temple; Lawrence.
 Guenther, Alice Medora; Lawrence.
 *Harnly, Paul Witmore; McPherson.
 Hart, Pattie; Grenola.
 *Havekorst, Walter Benedict; Hanover.
 Heaton, Phoebe Florence; *Flucom, Mo.*
 Hughes, Osee Gladys; Lawrence.
 *Hunsucker, James Glenn; Winchester.
 *Jones, Cassie Fern; Wichita.
 *Jones, Claude L.; Lawrence.
 *Kelly, Sherwin Finch; *New York.*
 *Kennedy, James Randolph; Fort Scott.
 Kent, Isabelle Mary; Lawrence.
 *Kernodle, Ruth Julia; *Grand View, Mo.*
 Kinney, May; Larned.
 *Kitchell, Bertha; Topeka.
 Kitzel, Ewald Karl; Sabetha.
 Koester, Fred William; Atchison.
 Leonard, Marie Louise; *Kansas City, Mo.*
 Lewis, Marion Florence; Lawrence.
 *Lyon, Charles B.; Topeka.
 Mead, William Henry; Leavenworth.
 Mee, William; *Oklahoma City, Okla.*
 Meyn, Fred Otto; Lawrence.
 *Miller, Frank Valentine; *Lake Charles, La.*
 *Murphy, Albert Newton; Lawrence.
 *Myers, Anna Groves; Lawrence.
 *McAtee, Olive Viola; Lawrence.
 McCall, Francis Marion; Iola.
 McIlhenny, Robert C.; Conway Springs.
 McIntee, Matthew Benedict; Lawrence.
 McLellan, Elizabeth Stone; Topeka.
 *McNeil, Frederick; Lawrence.
 Names, Arthur Andrew; McCracken.
 *Nelson, Hoyt Sylvester; *Kansas City, Mo.*
 Neptune, Harold Everette; Salina.
 *Nigg, Arthur John; Lawrence.
 *Oakleaf, Lovell Randal; Cherryvale.
 O'Keefe, Elizabeth Philomene; Newton.
 Ott, Gertrude; Eudora.
 *Palkowsky, William Henry; Collyer.
 *Patterson, Oliver Wellington; Lawrence.
 Pickering, Hazelle Gregg; Lawrence.
 Pinkley, Horace Lane; *Kansas City, Mo.*
 Potter, Rayburn S.; Clifton.
 Purcell, Marie Isabel; Ness City.
 *Rader, Ralph Roscoe; Howard.
 Ragle, Florence Susan; Iola.
 Read, Marion Harvey; Towanda.
 *Reed, Clement Austin; Burlington.
 Rhine, Elton; Washington.
 Robinson, Marie; Eudora.
 Rothenberger, John Henry; Leavenworth.
 *Rowles, Helen; Wamego.
 Russ, Glenn Francis; *Fall City, Neb.*
 Scholer, Henry Charles; Bonner Springs.
 Senior, Geneva May; Fort Scott.

SPECIALS—continued.

- Shanton, Lynn Clyde; Kensington.
 *Sherman, Hal W.; Lawrence.
 *Shiveley, Walter Lewis; *Kansas City, Mo.*
 Smith, Grant Robert; Lawrence.
 Smith, Lawrence; Lawrence.
 *Sonneman, Bert E.; Blue Mound.
 *Sproat, Philip H.; Topeka.
 *Steele, DeForest Clement; McPherson.
 *Steelsmith, Paul Wallace; Abilene.
 Stewart, J. Lawrence; Lawrence.
 Stewart, William B.; Clay Center.
 Stone, Almeron James; Lawrence.
 Stryker, Mary Seymour; *La Grange, Ill.*
 Studer, Wm. Joseph; Atwood.
 Sturtevant, Charles S.; Topeka.
 Sweet, Charles Edgar; Burlington.
 *Swogger, Glenn; Edgerton.
 *Talbert, Vesta; Conway Springs.
 Taylor, Lora; *Kansas City, Mo.*
 Thomas, Mrs. Charles L.; Lawrence.
 Tibbetts, James C.; Humboldt.
 Ttius, Lilla F.; Lawrence.
 Todd, George Cleveland; Lawrence.
 *Topping, Helen; Cedar Point.
 *Tucker, John Arthur; Florence.
 Walter, Edmund Kurt; *Kansas City, Mo.*
 *Wandell, Claude Bolton; Lawrence.
 *Waters, Jane; Bonner Springs.
 *Waters, Robert James; Bonner Springs.
 Weaver, Joe Senn; Concordia.
 *Weber, William John; Ellenwood.
 Wedell, Emma Caroline; Lawrence.
 *Welch, Gordon Bennett; Iola.
 White, Frank Hardy; Lawrence.
 *Whitten, Willis George; Marysville.
 Williams, Dick; Concordia.
 *Williams, James Orla; Columbus.
 *Williams, Letha Louise; Lawrence.
 *Wilson, Aileen; Clay Center.
 *Winn, Edward L.; *Kansas City, Mo.*
 Winship, Mrs. Amy D.; *Madison, Wis.*
 Wood, Walter Winfred; Lawrence.
 *Wolf, Edwin Fay; *University Park, Iowa.*
 *Woodbury, Tom Hicks; *Kansas City, Mo.*
 *Yankoff, Peter Demetroff; Kansas City.

SPECIALS, 161.

SCHOOL OF ENGINEERING.

SENIORS.

Ackers, Deane Emmett; Abilene.
 Alt, Glenn Leslie; Denton.
 Arnold, Ernest C.; Cottonwood Falls.
 Baer, Carl Toews; Moundridge.
 Beckley, Drew Trout; Lawrence.
 Blachly, Fred Eben; Abilene.
 Bliss, John Lawrence; Winfield.
 Boman, Arthur Leroy; Chanute.
 Bost, Frank Noel Orr; Augusta.
 Burton, Willard Augustus; Mound City.
 Campbell, Samuel Erle; Meade.
 Cole, Lawrence Edward; Lawrence.
 Cunnick, Paul Carlton; Lawrence.
 Daum, Merrill Freeland; Lawrence.
 Davis, Guy Foster; Lawrence.
 Dimmitt, Clarence Elmer; Lawrence.
 Dryden, Paul; Wichita.
 Fiske, Leland Emberson; Lawrence.
 Fletcher, Claude Charles; Glasco.
 Goldtrap, Walter Arthur; Lawrence.
 Groft, Andrew Joshua; Wa Keeney.
 Harding, Gilman Case; Leavenworth.
 Haskin, Fletcher; Frankfort.
 Hunter, Haydon Records; Bucklin.
 Jackson, Lloyd Earl; Lawrence.
 James, Darl Shively; Lawrence.
 Jespersen, Conrad Morris; Lawrence.
 Kreider, Charles Cottier; Lawrence.

Lackey, Donald Haldane; Peabody.
 Laizure, Lawellin Boyd; Lawrence.
 Miltner, Elmo Franklin; Wichita.
 McCune, Malcolm; Leavenworth.
 Neal, Roy Otley; Lawrence.
 Newton, Verne Thomas; Winfield.
 Nigg, Arthur John; Lawrence.
 Oman, Carl; Garnett.
 Poland, Clare Archie; Atchison.
 Priest, Richard Newton; Topeka.
 Putman, Ralph Ethan Allen; Lawrence.
 Rader, Valentine Simpson; Howard.
 Rathert, George August; Junction City.
 Samson, Henry Ernest; Quinter.
 Sanders, Earl Russell; Lawrence.
 Smee, George Reezin; Wa Keeney.
 Smith, Leo Frisby; Lawrence.
 Steven, Harry M.; Lawrence.
 Stillwell, Jerry Edward; Erie.
 Sweeney, Ben A.; *Kansas City, Mo.*
 Sykes, Clifford Burton; Kingman.
 Tait, Ralph Shannon; Wichita.
 Tanner, Edward Wadsworth; Lawrence.
 Templin, Arthur W.; Minneapolis.
 Vawter, Milton Jamison; Arkansas City.
 Washburn, Ellwood Gordon; Topeka.
 Welch, Gordon Bennett; Iola.
 Whitten, Willis George; Marysville.
 SENIORS, 56.

JUNIORS.

Abraham, Louis Jerome; Rosalia.
 Anderson, Carl Otto; Rosedale.
 Arlin, Harold Wampler; *Carthage, Mo.*
 Boltz, Clarence Weaver; Lawrence.
 Bower, Burnette; Mound City.
 Brand, Carl August; *Kansas City, Mo.*
 Buckhannan, Joseph Peter; Minneola.
 Runn, George Peter; Humboldt.
 Burke, Edmund Charles; Lawrence.
 Burt, Archie Ray; Blue Mound.
 Cadmus, Walter Gordon; Parsons.
 Campbell, Fred Work; Lawrence.
 Chase, Charles Rowlings; Emporia.
 Christine, Laurence Nathan; Lawrence.
 Clark, Rowland Jesse; *St. Joseph, Mo.*
 Cooley, Samuel James; Kansas City.
 Copp, Clarence Robert; Eudora.
 Crawford, Hugh William; Lawrence.
 Crum, Harry Edwin; Lawrence.
 Deardorff, Fred Maynard; *Kansas City, Mo.*
 Diehl, Paul Adam; Peck.
 Doran, William Thomas; *Kansas City, Mo.*
 Dueker, Milton Stanley; Lawrence.
 Easterday, Elton Ellsworth; *St. Louis, Mo.*
 Eggen, Charles Borton; Garden City.
 Elmore, Frank Baugh; Melvern.
 Fairchild, Harold Elvis; Bunkerhill.
 Fishback, James Orville; Hutchinson.
 Forsythe, Alfred Vernon; Dodge City.
 Foster, Norman McCloud; Ellsworth.
 Foulk, Albert Carl; Lawrence.
 Fox, Frank Herbert; Lawrence.
 Gearhart, Walter Russell; Englewood.
 Griffith, Clarence Lee; Lawrence.
 Gunnels, Joel Orin; Paola.
 Hagenbuch, Charles W.; *Kansas City, Mo.*

Hainbach, Joseph Mathews; Chanute.
 Hill, Clarence James; Cawker City.
 Hodges, A. Omar; Kansas City.
 Holden, James Henry; Chanute.
 Jackson, Henry Cushing; Arkansas City.
 Johnson, George Daniel; Lawrence.
 Kelly, Sherwin Finch; *New York.*
 Kietzmann, Charles Emil; Alta Vista.
 Kruse, Schiller; Lawrence.
 Laney, Thomas George; Erie.
 Lefevre, Emil Clemens; Caney.
 Lieurance, William Harvey; Lawrence.
 Major, Oscar Sellon; Wichita.
 Marshall, Hugh; Coffeyville.
 Marshall, John Leroy; Rosedale.
 Metcalf, Earl Boyd; Lawrence.
 Mickey, Samuel Waite; Junction City.
 Morton, Thomas Q.; Atchison.
 McCormac, Silas Andrea; Osborne.
 McIntyre, John; Topeka.
 McLaren, Lester Hugh; Tescott.
 Nelson, James Valentine; Hutchinson.
 Nigg, Milton Wesley; Lawrence.
 Pattinson, John Ralph; Hutchinson.
 Paul, Homer Harrison; Augusta.
 Pickering, Walter Roscoe; Galena.
 Randolph, William Marcus; Lawrence.
 Reed, Harold Raymond; Lawrence.
 Rolfs, Eugene Leonard; Lawrence.
 Rumsfeld, Herbert W.; *Kansas City, Mo.*
 Russell, Harlan Arthur; Lawrence.
 Schroepfer, August Michael; Wamego.
 Sevilla, Angel; *Danli, Honduras, C. A.*
 Skaggs, Claude Albertine; Winona.
 Slattery, Paul; Lawrence.
 Sloan, Charles Findley; Pomona.

JUNIORS—*continued.*

Smith, Gail Arthur; Great Bend.
Spangler, Fred Le Port; Lecompton.
Spangler, Karl Bauman; Lawrence.
Sparks, Lloyd Gerald; Greensburg.
Stryker, Wilburn; Fredonia.
Tillotson, Elroy Eugart; Olathe.
Turkington, Victor Howard; Cherokee.
VanDerlip, Clyde Leroy; Ottawa.

Waite, William Jasper; Lawrence.
Wakenhut, Carol John; Salina.
Waldie, Robert; Lawrence.
Watkins, Benjamin Franklin; Chanute.
Wickstrum, Arthur S.; *Independence, Mo.*
Wiesters, Alfred Henry; *Lanham, Neb.*
Wright, Kenneth W.; Fort Scott.
Yeokum, George Henry; Lawrence.

JUNIORS, 88.

SOPHOMORES.

Adams, Merle; Lawrence.
Akers, Charles Edward; Leavenworth.
Alford, Eugene Davis; Leavenworth.
Asendorf, William Fred; Garden Plain.
Baker, Quin; Cherryvale.
Baltz, Elmer Harold; Attica.
Bell, Arnold Arch; Ottawa.
Bell, George Andrew; Neodesha.
Bell, James Glenn; Neodesha.
Bernardin, Eugene Philip; Parsons.
Boone, William Moorman; Highland.
Powman, George Monroe; Lawrence.
Bressem, Paul Edward; Sabetha.
Brodie, Nathaniel Louis; Lawrence.
Brown, James Vittitow; Dillwyn.
Brown, William Rollie; Lawrence.
Bryan, Jean Paul; *Garden City, Mo.*
Campbell, Francis Harold; La Cygne.
Clawson, Millard Edward; Concordia.
Clover, Earl Lester; Humboldt.
Cohn, Byron Spencer; Lawrence.
Cress, Howard Ralph; Clements.
Davis, Robert Wallace; Lawrence.
Davis, Stanley J.; *Kansas City, Mo.*
Deaver, Ray Emerson; Fairview.
Decker, Leonard Everard; Lawrence.
Dorsey, Eli Ferrell; Lawrence.
Dyche, Lucien Reed; *Oklahoma City, Okla.*
Farley, Samuel Frank; Kansas City.
Fast, John Clarence; Hutchinson.
Garvie, Hugh Alexander; Abilene.
Gedney, Kenneth Hayde; *Kansas City, Mo.*
Gibbens, Leon Draper; Nickerson.
Gibson, Woodman Lee; Lawrence.
Gillespie, Bernard Edgar; Lawrence.
Gish, Henry John; Abilene.
Grecian, Everett Joy; Hill City.
Haines, William Mattison; Chanute.
Hammond, John Isaac; Towanda.
Harrison, Donald Russell; Lawrence.
Hart, Charles Edward; Glade.
Hart, Floyd Garvey; Topeka.
Hartley, Irvin Walter; Lawrence.
Hawkins, George; Lawrence.
Hemphill, Clyde Russel; Chanute.
Holt, Hobart Clayton; Topeka.
Hough, Cecil Thomas; Lawrence.
Hull, Louis Milton; Norton.
Jones, Max Byron; *Kansas City, Mo.*
King, Walter Allen; Cawker City.
Kirtland, John O.; Salina.
Kitchen, Edgar Roy; Rosedale.
Krebs, Julius John; Lawrence.
Kreigh, Hobart Russell; Lawrence.
Leary, Ora George; Kansas City.
Lewis, Robert Long; Lawrence.
Lindsey, Adrian Hobart; Lawrence.
Lomax, Orville Quinten; Cherryvale.

Lutz, Hobart Fred; Lawrence.
Lynn, Clarence; Ottawa.
Marrs, Jay Dean; Lawrence.
Miles, Robert Cullen; Lyndon.
Mohler, Harry Harward; *St. Joseph, Mo.*
McMillen, B. LeRoy; Minneapolis.
McNeil, Frederick; Lawrence.
Neumann, Warren Randolph; *Wymore, Neb.*
Nitchy, George Walter; *Kansas City, Mo.*
Nottingham, Harold Emmett, Lawrence.
Page, James Harold; Winfield.
Park, Bartholow; Atchison.
Powell, Arthur Thomas; Ottawa.
Raemer, Fred William; Herkimer.
Reedy, Howard Lester; Lawrence.
Rockwell, Raymond Clarence; Lawrence.
Rose, Ernest Herbert; Abbyville.
Ruble, Roland Orval; Parsons.
Ryniker, Frank Alvin; Wichita.
Schoenfeldt, Edward H.; *Independence.*
Shaft, Paul Emory; Lawrence.
Shreve, John Donald; White Cloud.
Shughart, Charles Lester; Winchester.
Slade, John Paul; Clay Center.
Smith, Elmer Wesley; Norton.
Smith, Raymond Robert; *Alva, Okla.*
Smith, Theodore Soper; Kansas City.
Snooks, Albert Floyd; Sterling.
Staggs, Horace Mitchell; *Hennessey, Okla.*
Steelsmith, Paul Wallace; Abilene.
Street, Gordon Frink; Lawrence.
Swaller, Sidney Robbins; Clay Center.
Thiele, Edwin George; Hanover.
Thompson, W. Donald; Junction City.
Todd, William Neeley; Leavenworth.
Truesdale, Roy Miller; Leavenworth.
Uhrlaub, Ernst August; Lawrence.
Uhrlaub, Rudolph Reinhart; Lawrence.
Van Houten, Harold C.; Topeka.
Vincent, Guy Morgan; Iola.
Waggoner, Jack Holmes; Topeka.
Wagner, Page Paschal; Concordia.
Wagstaff, Richard Hibbard; Lawrence.
Walker, James Kenyon; Lawrence.
Walters, Fay Clarence; Lawrence.
Webb, David Wilson; Cherokee.
Weekley, Ira Coleman; Lawrence.
Wheeler, Louis James; Iola.
Williams, James Orla; Columbus.
Willson, Abner Rosebrugh; Lawrence.
Wilson, Leland Alvin; Chanute.
Winters, Ray; Kansas City.
Wormington, Loren Earnest; Dodge City.
Wyatt, Wiley Jefferson; Lawrence.
Young, Charles Dale; Dodge City.
Young, Yssel Yoette; Junction City.
Zoellner, Walter Frank; Tonganoxie.

SOPHOMORES, 115.

FRESHMEN.

Angevine, Montfort E.; Lawrence.
Angle, Roy; Kansas City.
Axline, Andrew Ansel; Pratt.
Bennett, Alfred Starr; Pratt.
Bennett, Clarence; Stafford.
Benschmidt, Newton; Hutchinson.
Besse, Harold V.; Pittsburg.

Betscher, Carl Edwin; Eureka.
Boese, Adolph; Hillsboro.
Bonebrake, Frederick T.; Topeka.
Bradley, J. Robert; Caldwell.
Brewster, Edwin Stewart; Leavenworth.
Brown, Ernest Lester; Coffeyville.
Brown, Howard Dodge H.; Beloit.

FRESHMEN—*continued.*

- Brown, Rex Lenoi; Hutchinson.
 Bullock, Harold Jefferson; Severy.
 Butcher, Cary Preston; Wellington.
 Carlson, Walter George; *Williams, Ariz.*
 Cary, William Tracy; Arkansas City.
 Cassity, Roy Hampton; Ashland.
 Cleek, John Leo; Cherryvale.
 Colburn, Reno Berry; McCune.
 Coleman, Deon Philip; Leavenworth.
 Cooper, William Clarke; Buffalo.
 Couchman, Floyd Houghton; Garden City.
 Crawford, Jess; Whiting.
 Cronk, Seymour Hays; Stafford.
 Davis, John Clark; Salina.
 Dedo, Leland Claude; Kansas City.
 DeVoe, George Melville; *Kansas City, Mo.*
 DeWald, Daniel; Russell.
 Dewey, Noel Fay; Lakeland.
 Dillon, Clyde Wilson; Nickerson.
 Drake, Charles Jackson; Jewell.
 Dunkley, George; Lawrence.
 Dye, Milton Lawrence; Jewell.
 Elledge, Emmett Russell; McCune.
 Ellison, James Arthur; Lawrence.
 Evans, Roger William; Lawrence.
 Eyer, Clarence George; Salina.
 Fipps, J. Everett; Harper.
 Frankenstein, Morris; *Kansas City, Mo.*
 Fraser, Edward Jackson; Sterling.
 Frater, Allan; Fredonia.
 Gage, Francis Dana; Minneapolis.
 Geiger, John Edwards; Syracuse.
 Gerhard, Henry Arthur; Girard.
 Goodwin, Edward Harold; Baxter Springs.
 Groft, Audley Feltermann; Wa Keeney.
 Hase, Kendall Milton; Holton.
 Hadley, Lyle Harris; Glen Elder.
 Hale, Milford Worth; Formoso.
 Hanley, Wallace; *Kansas City, Mo.*
 Hart, George Marion; Lawrence.
 Heariold, Frank Cecil; Hutchinson.
 Holland, Frank Delno; Pleasanton.
 Hollis, Joseph John; Delphos.
 Hunt, Lewis Brooke; Abilene.
 Hunt, Percy E.; Arkansas City.
 Jewett, John Mark; De Soto.
 Johnson, Martin Marion; Salina.
 Johnson, Virgil Glenn; Oneida.
 Jones, Clarence William; Attica.
 Jones, Harold McKinley; Kansas City.
 Keener, Charles Alva; *Kansas City, Mo.*
 Kepple, Herbert; Richmond.
 Kirkendall, Cedric Lionel; Natoma.
 Kirkpatrick, Fred; Dodge City.
 Klomp, Albert S.; Leavenworth.
 Lamer, Joseph Secondule; Leavenworth.
 Lansing, Jack Courtney; Leavenworth.
 Levey, E. Robert; *Kansas City, Mo.*
 Levin, Julius Harry; Kansas City.
 Limbocker, Wayne E.; *Independence, Mo.*
 Lowman, William Knox; Lawrence.
 Mahan, Joe Rossinger; Independence.
 Martin, Charles Albert; *Kansas City, Mo.*
 Martin, Howard James; Stafford.
 Mason, Robert Frazier; *Kansas City, Mo.*
 Mason, Ray Benjamin; Lawrence.
 Mathews, Kelsey; *Kansas City, Mo.*
 Melton, Robert Thomas; Tecumseh.
 Moore, Clyde Clifton; Whiting.
 Morgan, Ernest William; Walnut.
 Morley, Bernard D.; *Kansas City, Mo.*
 Morrison, Thomas Layne; Newton.
 Murphy, Alfred Clair; Lawrence.
 McCall, Dana Hewitt; Hiawatha.
 Oakleaf, Lovell Randal; Cherryvale.
 Oakleaf, Paul Byron; Cherryvale.
 Ohmsted, Herbert Wolcott; Lawrence.
 Olson, Forest Carl; Havensville.
 Owen, Toby Allison; Fort Scott.
 Palkowsky, Henry William; Collyer.
 Peckham, Jacob Walter; Clay Center.
 Penny, Myrl; Effingham.
 Perkins, Lucius Junius; Lawrence.
 Peters, Shirley Wilmont; Lawrence.
 Pickering, Ernest; Lawrence.
 Prebble, Fred; Irving.
 Quinlan, Amos Lawrence; Linwood.
 Record, Forrest Meade; Lawrence.
 Reeves, Ralph Bente; Dodge City.
 Reid, Theodore Carey; Stafford.
 Rhoades, Ralph Omer; *Carthage, Mo.*
 Ritter, Archie; Bronson.
 Roberts, Clifton; Kansas City.
 Russell, Harvey LeRoy; Muscotah.
 Sandifer, James Allen; El Dorado.
 Scott, Hugh Lee; Newton.
 Sellards, Eugene Watson; Lawrence.
 Seward, Charles Lee; Neodesha.
 Sewell, Arthur Thomas; Garnett.
 Seybold, John Statis; Topeka.
 Shearer, Jerry; Independence.
 Sheperd, Harry Walker; Hutchinson.
 Sherwood, Leon Archibald; Independence.
 Shively, Walter Lewis; *Kansas City, Mo.*
 Smart, Ralph Francis; Stafford.
 Smith, Harry Alvin; Horton.
 Smith, Howard Lee; Bronson.
 Smith, William Thomas; Pleasanton.
 Stewart, William Young; Hutchinson.
 Stout, William Edwin; Winfield.
 Strickland, Paul William; Lawrence.
 Sweeney, Edward J.; Ozawkie.
 Tate, James Noell; Lawrence.
 Thorene, Victor Edward; Sharon Springs.
 Thralls, Warren Harrington; Wellington.
 Tournay, Ernest August; Caney.
 Tracey, John Charles; Lawrence.
 Treat, Burnett Forrest; Kansas City.
 Truesdell, Harry Donald; Marysville.
 Trull, William Leo; Garden City.
 Van Scoyk, William Vernon; Goodland.
 Walters, Ray Pearce; Lawrence.
 Wamsley, Oren Edward; Conway Springs.
 Warders, Charles Edward; Irving.
 Weigand, Eugene Paul; Burlington.
 White, Karl Hardy; Lawrence.
 White, Oliver Wendell; Solomon.
 Whittaker, John C.; *Oklahoma City, Okla.*
 Writz, Andrew Theodore; Ellinwood.
 Wolfe, Roland John; Horton.
 Young, Lloyd Morse; Iola.
 Ziesenis, Harry Charles; Lawrence.

FRESHMEN, 146.

SPECIALS.

- Ayres, Frank Herman; *Kansas City, Mo.*
 Bowman, Henry; Lawrence.
 Chase, James Lysle; Leavenworth.
 Constant, Clyde Stanley; Lawrence.
 Doughman, Claude Loyola; Parsons.
 Emerson, Adrian Von; Lawrence.
 Frier, William Thomas; Russell.
 Hackney, Myron Winston; Leavenworth.
 Keeling, Ross Custer; Oakley.
 King, J. Charles; Lawrence.
 LaMay, Russell; Kansas City.
 Luby, William Arthur; *Kansas City, Mo.*
 Madden, John Edgar; Auburn.
 Madden, Milton Finney; Auburn.
 Moneypenney, Kent; Topeka.
 Parr, Adrian Thomas; Topeka.
 Somers, George Hall; Newton.
 Stevenson, Clyde Duncan; Lawrence.

SPECIALS, 18.

SCHOOL OF FINE ARTS.

SENIORS.

Dawson, Helen; Great Bend.
 Harper, Adda Mary; Topeka.
 Jenkins, Helen; *Guthrie, Okla.*
 Kernodle, Ruth Julia; *Grand View, Mo.*
 Mackie, Mabel; Lawrence.

Perry, Eugene Schuyler; Wichita.
 Preyer, Mary; Lawrence.
 Schmidt, Willa Katherine; *Kansas City, Mo.*
 Wilson, Ailene Jacquette; Clay Center.
 SENIORS, 9.

JUNIORS.

Anderson, Mary Ella; De Soto.
 Barber, Mary Katharine; Holton.
 Bell, Grace Adelaide; Lawrence.
 Bocker, Helen Argelia; Solomon.
 Crose, Maud Myrtle; Wilson.
 Davis, Edna Marie; Chanute.
 Duncan, Nita May; Esbon.
 Gruver, Temple Daisy; Lawrence.
 Jones, Viola; Fredonia.
 Ketchum, Pauline; Lawrence.

Lacy, Pearl Hazel; Lawrence.
 Libbey, Lois; Altamont.
 Lockett, Dora Edna; Anthony.
 Nusz, Marie; Abilene.
 Protch, Rheba Geneveive; Lawrence.
 Sproul, Pauline; Sedan.
 Topping, Helen; Cedar Point.
 White, Essie Bernice; Mankato.
 JUNIORS, 18.

SOPHOMORES.

Allen, Sarah Frances; Lawrence.
 Bailey, Lucile; Lawrence.
 Canfield, Mina Rosa; Holton.
 Countee, Arthur Lorenzo; Kansas City.
 Diver, Dorothy Elizabeth; Lawrence.
 Dumm, Marjorie Alice; Junction City.
 Fitch, Margaret Elizabeth; Lawrence.
 Green, Grace Mildred; Kansas City.
 Hopkins, Ednah Evelyn; Lawrence.
 Ingalls, Frances Susan; *Birmingham, Pa.*
 Lawellin, Bonnie Myrtle; Garnett.
 Lutz, Nellie Estell; Jewell.

McCanles, Eva Josephine; Lawrence.
 McCormick, Lucile Jeannie; Lawrence.
 Rice, Alice; Lawrence.
 Riddle, Helen; Marion.
 Stimpson, Josephine Frances; Lawrence.
 Talbert, Vesta; Conway Springs.
 Thrall, Mildred E.; Neosho Falls.
 Watson, Gladys Harriet; Salina.
 Whitecroft, Ruby Harriett; Lawrence.
 Woulfe, Grace June; Newton.
 SOPHOMORES, 22.

FRESHMEN.

Ainsworth, Elizabeth; Lyons.
 Bartley, Wanda Marie; Florence.
 Bell, Ida Dorothy; Lawrence.
 Boswell, Jennie; Salina.
 Butts, Susie Elizabeth; Mulvane.
 Constant, Olive Jane; Lawrence.
 Dale, Olivia Lanyon; Lawrence.
 DeForest, Margaret May; Lawrence.
 Dolechek, Christine A.; Ellsworth.
 Doyle, Gertrude Lois; Lawrence.
 Elmore, Ruby Ratoria; McCracken.
 Evertson, Letha A.; Melvern.
 Golton, Glenn Donald; Milton.
 Hall, Evelyn Marjorie; Ottumwa.
 Harriman, Earl Drexel; Hepler.
 Haworth, Rose Elizabeth; Lawrence.
 Henley, Marian; Lawrence.
 Jaillite, Adriance; Council Grove.
 Kincaid, Flossie; Lawrence.
 Merritt, Miriam; Hiawatha.
 Miller, Laura Cessna; Kansas City.
 Montaldo, Lena; *Noel, Mo.*
 Murphy, Lois Amelia; Goodland.

McClintock, Pauline; Kansas City.
 McCoid, Ruth Mary; Silver Lake.
 Osborn, Blanche De Witt; Independence.
 Peairs, Helen Haskell; Lawrence.
 Pitts, Mildred Steele; *St. Joseph, Mo.*
 Rhodes, Helen Minnie; Frankfort.
 Riddle, Dorothy Winifred; Herington.
 Risinger, Lois Marjorie; Fredonia.
 Rockwell, Ella Lucile; *Kansas City, Mo.*
 Roebke, Doris Pauline; Holton.
 Rowles, Helen; Wamego.
 Searles, Isabel; Wetmore.
 Smith, Agnes Robertson; *Springfield, Ill.*
 Trovillo, Helen Louise; Lawrence.
 Van Allen, Ruth Eileen; Spivey.
 Waters, Jane; Bonner Springs.
 Weed, Helen Irene; Lawrence.
 Wharton, Thelma Isabelle; Parsons.
 Wilson, Jo Alta; Beloit.
 Windhorst, Emma Henry; Belpre.
 Woelk, Eda Louise; Russell.
 Wolley, Hazel; Liberal.
 FRESHMEN, 45.

SPECIALS.

*Enrolled in another school of the University.

- Allen, Una Lorraine; Muscotah.
 *Anderson, Willard Coe; Partridge.
 *Arnett, Ila Maud; Lawrence.
 Bernhard, Inez; Lawrence.
 Borg, Jessie Eleanor; Lawrence.
 *Butts, Madeline; Wichita.
 *Chaffee, Myrtle; Marysville.
 *Chaplin, Gladys Albertina; Edgerton.
 *Clark, Helen Eugenia; *Kansas City, Mo.*
 *Coffelt, Gola William; Blue Mound.
 *Cole, Mrs. Dorothy Walker; Lawrence.
 *Cooper, Lloyd Frank; Hoxie.
 Copeland, Theodore Chas.; Lawrence.
 Courtney, Mary Edith; Lawrence.
 Cox, Grace Marie; Prescott.
 Cross, Viah May; Hutchinson.
 *Crowley, John James; Lawrence.
 *Darby, Maurice; Washington.
 *Darby, Olin; Washington.
 *Darby, Raymond; Washington.
 DeWald, Amelia; Russell.
 Dicker, Mary Alice; Lawrence.
 Dudley, Grace; Delphos.
 Duncan, Elizabeth; *Perry, Okla.*
 Dunn, Elizabeth Corinne; Ottawa.
 *Eldridge, Paul; *Dewey, Okla.*
 *Elliott, Altina Edward; Lawrence.
 Ellison, Leta Maude; Lawrence.
 *Frederick, Margaret Alice; Bonner Springs.
 Gilbert, Mildred Gertrude; Clayton.
 Harper, Margaret; Lawrence.
 *Hart, Margarette Adalyn; *Raton, N. M.*
 Havens, Gertrude Spaulding; Lawrence.
 Helmick, Dora; Lawrence.
 Hinesley, Edith Elizabeth; Lawrence.
 Holmes, Orlo Sylvester; Coldwater.
 *Hull, Lewis Madison; Nickerson.
 Huntsman, Harold Rice; Lawrence.
 Jarvis, Mary Anna; Arkansas City.
 *Johnson, Scott; Lawrence.
 *Johnston, Harman Tipton; Lakin.
 Kester, Mrs. Frederick E.; Lawrence.
 *Krueger, Karl Adalbert; Atchison.
 *Lamb, Hester Marjory; Yates Center.
 *Lauer, Albert Benjamin; Osage City.
 Lefschetz, Mrs. Alice B.; Lawrence.
 Linn, Mary Minerva; Lawrence.
 Longabaugh, Hazel Joy; Lawrence.
 Maddox, Beatrice Mildred; Coffeyville.
 Martin, Frank; Troy.
 *Martling, Francis Hodgen; Kansas City.
 Messick, Clarence Roy; Topeka.
 Metcalf, James Leon; Lawrence.
 Miller, Ruth Cornelia; Pratt.
 Moody, Marion Alexander; Girard.
 *McMeel, Anna Elizabeth; Meade.
 McNaghten, Eugenia; Hutchinson.
 Noll, Frederick Achning; Lawrence.
 Norfolk, Hazel Mae; Ottumwa.
 Nungesser, Ella; Lawrence.
 *Osborne, Edna Pearl; Lawrence.
 *Parkinson, Marina J.; *Fort Smith, Ark.*
 Petz, Grace Christina; Lawrence.
 *Phinney, Helen Lucille; Oskaloosa.
 Pinkston, Theta Edith; Independence.
 *Piotrowski, Edith Agnes; Lawrence.
 Pipes, Zelda Muriel; Lawrence.
 Powell, Clara Gault; Lawrence.
 Roberts, Mrs. Henrietta H.; Lawrence.
 Rudolph, Mrs. Rose Viola; Lawrence.
 *Scalapino, William; Everest.
 Scheurer, Clara Henrietta; Lawrence.
 Schenck, Mabel; Larned.
 Schumann, Fred Emil; Lawrence.
 Scoggin, Alta Sophia; Lawrence.
 Simms, Marie Wolbert; Lawrence.
 Smith, Alta Madaline; Lawrence.
 *Smith, Harry Merle; Bucklin.
 Spangler, Myra Edith; Lecompton.
 Stevens, Philip Flint; Lawrence.
 *Studer, William Joseph; Atwood.
 *Sturtevant, Charles; Topeka.
 Swagerty, Trevia Mae; Eskridge.
 Thomas, Marv Stevenson; Waterville.
 *Weaver, Edith Carrie; Belleville.
 *Weltmer, Loren Edward; Smith Center.
 White, Margaret; Clay Center.
 Wilbur, Orphana; Lawrence.
 *Wullenwober, Irma Katharine; Harper.
 Young, Mrs. Christina Pearl; Lawrence.

SPECIALS, 90.

SCHOOL OF LAW.

SENIORS.

Allvine, Glendon; Kansas City.
 Asher, Benjamin Harrison; Great Bend.
 Baker, Milton Lindsley; Parsons.
 Baldwin, Frank Clifford; Washington.
 Battaile, John Francis; Lawrence.
 Beall, William Mosias; Grantville.
 Boddington, Edward Mosley; Kansas City.
 Booker, Guy John; Emporia.
 Boynton, Roland Elmer; Lawrence.
 Branine, Harold R.; Hutchinson.
 Burnett, Donald Charles; Chanute.
 Calkins, Willis N.; Burlingame.
 Clark, Elmer Clinton; Oswego.
 Cline, Neil Frank; *Kansas City, Mo.*
 Cory, Charles Henry; Parsons.
 Dale, Kirke Woodford; Cedar Vale.
 DeVine, John; Cherryvale.
 Duncan, Henry Russell; Lawrence.
 Eggleston, James Hiram; Parsons.
 Elswick, Ira Russell; Caldwell.
 Foust, Kenneth H.; Iola.
 Gibson, Admud Jennings; McCune.
 Gray, Harry Taylor; St. John.
 Halloran, Charles Eben; Ottawa.
 Hamilton, John William; Pleasanton.
 Hemphill, Robert Warren; Norton.

Hill, Joseph Wilford; Lawrence.
 Hillman, Alfred D.; Glen Elder.
 Hoffman, Arthur Herman; Enterprise.
 Hurd, Fred; Kingman.
 Hutchings, Harland Bartlett; Lawrence.
 King, Cassus Willard; Marion.
 Lamar, Guy Martin; Kansas City.
 Lamb, Errett Earl; Yates Center.
 Leasure, Fred Jay; La Cygne.
 Lupton, Edwin Henry; Lawrence.
 MacGregor, Riley William; Medicine Lodge.
 Moffat, John Regg; Arkansas City.
 Moore, Charles Leroy; Lawrence.
 Moss, Sidney Adrian; Lawrence.
 McKay, James Blaine; Olathe.
 Pearson, John Thomas; Parsons.
 Reed, Clement Austin; Burlington.
 Skinner, Robert Clark; *Kansas City, Mo.*
 Smith, Robert; Fort Scott.
 Stiles, DeWitt Mills; Lawrence.
 Strother, George Beauregard; Lawrence.
 Teasley, Raymond Dosh; Concordia.
 Waters, Robert James D.; Bonner Springs.
 Whitten, Frederick Easton; Wellington.
 Williams, Dick; Concordia.

SENIORS, 51.

MIDDLES.

Allen, Ivan Alton; Washington.
 Baldwin, Clifford Waste; Seneca.
 Barba, Eusebio Carbonell; Lawrence.
 Beach, George Henry; Lawrence.
 Bennett, Reuben George; Newton.
 Benson, Thatcher Wyllis; Independence.
 Blincee, Ernest Edward; Fort Scott.
 Bond, Llewellyn Jack; Washington.
 Bowersock, Vernon James; Wayside.
 Bradley, Issac Franklin; Kansas City.
 Burch, Allen Bank; Lawrence.
 Campbell, Daniel Swan; *Joplin, Mo.*
 Craig, Halleck Irwin; Independence.
 Crowley, William Joseph; Kansas City.
 Dittmer, Otto Hermann; Independence.
 Dodderidge, Kenneth Charles; Lawrence.
 Egan, Lee Maynard; *Kansas City, Mo.*
 Fisher, Jesse Morgan; Tonganoxie.
 Flinn, John Piercy; Chanute.
 Friend, Paul Holston; Lawrence.
 Gaitskill, Joseph Ennis; Girard.
 Goppert, Ernest John; Belleville.
 Greever, Paul Ranous; Lansing.
 Griesa, Charles Henry; Lawrence.

Gumbiner, Alton; Lawrence.
 Harlan, Harry; Smith Center.
 Jones, Karl Esterly; Chanute.
 Kennedy, James Randolph; Fort Scott.
 Malsed, John Arthur; Parsons.
 Mattoon, Harold Frank; Lawrence.
 Miller, Frank Valentine; *Lake Charles, La.*
 Miller, Henry Lawrence; Horton.
 Mitchell, Alexander Baldwin; Lawrence.
 Mulloy, Thomas Nicholas; Lincoln.
 Murphy, Albert Newton; Lawrence.
 McLoughlin, John Alexander; Leavenworth.
 McMillin, Stewart Earl; Arkansas City.
 Nelson, Hoyt Sylvester; *Kansas City, Mo.*
 Piepenburg, Aaron Frederick; Lawrence.
 Rader, Ralph Roscoe; Howard.
 Sautter, Paul H.; Horton.
 Simmons, John Stuart; Hutchinson.
 Small, Richard Dante; Lawrence.
 Smith, Walter Edgar; Horton.
 Sproull, Ralph David; Lawrence.
 Weber, William John; Ellinwood.
 Weygandt, Cletus Jay; Keats.

MIDDLES, 47.

JUNIORS.

Baltzer, Benjamin; Hillsboro.
 Barteldes, Armin George; Lawrence.
 Bell, Alexander Rankin; Chetopa.
 Benedict, Maurice Tenney; Lawrence.
 Brewer, Lucius Holsey; Lawrence.
 Carter, James Lee; *Kansas City, Mo.*
 Carter, Leslie Marion; Howard.
 Colley, Richard Price; *Tulsa, Okla.*
 Cowgill, Russell Twaddle; Lawrence.
 Darrah, Sam James; McPherson.

Davenport, Ross; *Kansas City, Mo.*
 Douglas, Arthur Lloyd; Crestline.
 Dykes, John Henry; Lebanon.
 Fink, Floyd Milvin; Downs.
 Flagg, Donald Sergeant; Lawrence.
 Fratcher, Frank A.; Rosedale.
 Frost, Austin; Lakin.
 Gates, Miles Walker; Rosedale.
 Gelvin, Clyde Richardson; Pratt.
 Guy, Francis Arthur; Wakefield.

JUNIORS—*continued.*

Hake, Wallace Otto; Minneapolis.
 Hargett, Jay Earl; Lawrence.
 Harrison, William David; Hutchinson.

Havekorst, Walter Benedict; Hanover.
 Hershberger, Arthur Wayne; Breensburg.
 Hettinger, John Adams; Hutchinson.
 Jackson, Jared Fox; Atchison.
 Jones, Claude Leonadis; Lawrence.
 Jones, Wilbur Harold; Wichita.
 Livingood, Floyd Mechem; Ottawa.
 Lyon, Charles Bentley; Topeka.
 Marlowe, Charles C.; Hartford.
 McKone, Jean Alfred; Tonganoxie.

McLean, Benjamin Drew; Wichita.
 McMeel, Bernard Francis; Meade.
 Norton, James Gerald; Newton.
 Pausch, Fred LeRoy; Atchison.
 Pedroja, Edward Emil; Lawrence.
 Rice, Carl; Coffeyville.
 Shinn, Earl Whittier; Burns.
 Smith, Elwin Leslie; Colony.
 Stevens, John Rex; Salina.
 Terrell, Frank Hixon; Holton.
 Tucker, John Arthur; Florence.
 Walters, Archie Marion; Lawrence.
 Youse, Clare Earl; Baxter Springs.

JUNIORS, 46.

SPECIALS.

* Enrolled in another school of the University.

*Bradley, Aubrey J.; Blue Mound.
 *Brington, Clarke; Dodge City.
 *Davis, Bryan L.; Lawrence.
 *Dykes, John Henry; Lebanon.
 Fitzgerald, John Henry; Lawrence.
 *Hoffmann, Harry William; Lawrence.
 *Hurd, Robert E.; Wichita.
 Lichlyter, Frank Everett; Douglass.
 Lindsay, Robert Glick; Kansas City.
 *Lott, Kenneth H.; Lawrence.
 Morrissey, Frank M.; Belleville.
 McCammon, John Purdue; Springfield, Mo.
 McInnes, Taylor James; Wichita.
 *McKinney, William Ayres; Howard.

*Pringle, Kenneth; Alma.
 Rankin, John Orlando; Emporia.
 Schmidt, Ed Schermerhorn; Galena.
 *Smith, Charles William; Topeka.
 *Smith, Errett G.; Delphos.
 Sproat, Philip Hopkins; Topeka.
 Stone, Walter; Lawrence.
 *Teachenor, Dix; *Kansas City, Mo.*
 *Thompson, Leland; Marion.
 Vogel, Arthur David; Leavenworth.
 *Wedell, Hugo; Lawrence.
 Winn, Edward L.; *Kansas City, Mo.*
 Woodbury, Tom Hicks; *Kansas City, Mo.*

SPECIALS, 27.

SCHOOL OF PHARMACY.

SENIORS.

FOUR-YEAR COURSE.

Bixby, Benjamin Parker; McPherson.
Chinery, Frank Lawrence; Lawrence.
Day, Harry Edward; Canton.

Sherman, Hal Wilbur; Lawrence.
Sonneman, Bert E.; Blue Mound.
Wandell, Claude Bolton; Lawrence.

THREE-YEAR COURSE.

Hunsucker, James Glenn; Winchester.
Lindauer, Earl Asa; St. John.

Stewart, James MacLeod; Clay Center.

TWO-YEAR COURSE.

Beeson, Marie Edith; Lawrence.
Bignall, Bliss Olin; Alma.
Campbell, Joseph Edgar; Topeka.
Davis, William Randolph; Frankfort.
Delhotal, Charles Earle; Attica.
Foster, Edgar Thomas; La Harpe.
Goheen, Ira Lee; Clay Center.
Hale, Aura Lorraine; Norton.

Kennedy, Carl Paris; Lawrence.
Munford, Mary Elizabeth; Montezuma.
Osborne, Herbert Leo; Wichita.
Robertson, Valie; Salina.
Schroers, Harry George; *St. Joseph, Mo.*
Thorpe, Lewis Nathaniel; Morganville.
Williams, Daniel Adolph; Burlingame.
SENIORS, 24.

JUNIORS.

FOUR-YEAR COURSE.

Ellis, Frank; Iola.
Herman, Ralph Scallon; Olathe.

Kampert, Bernard Will; Lawrence.

THREE-YEAR COURSE.

Bell, Ada Pearl; *Deadwood, S. D.*
Brown, Joyce Elizabeth; Logan.
Cook, Eugene B.; Cherryvale.
Pariss, Walter Byron; Leavenworth.

Harms, Herbert A.; Wichita.
Harrison, George; Lawrence.
Swarts, Lawrence Patrick; Arkansas City.

TWO-YEAR COURSE.

Anderson, Ivan Harold; Oskaloosa.
Blaylock, Fred Orville; De Soto.
Cooney, John Paul; Lawrence.
Diller, Howard Everette; Washington.
Doherty, Charles Grant; Wichita.
Farris, Olen Rupert; Norwich.

Griffith, Louis Arnold; Scott City.
Holben, Leonard Leroy; Phillipsburg.
Raney, Richard Michael; Marquette.
Schroers, Edgar Charles; *St. Joseph, Mo.*
Smith, William Landon; Kansas City.
Wilson, Glen Elijah; Lawrence.
JUNIORS, 22.

SOPHOMORES.

THREE-YEAR COURSE.

Bloomheart, John Lester; Beverly.
Childs, Wesley McClung; Kansas City.
Ewer, William S.; Dresden.
Frevele, Earl Lorenz; Moundridge.

Hartshorn, Obart Vincent; *Carlsbad, N. M.*
Mehl, Byron Henry; Leavenworth.
Renner, George William; Lawrence.
Reynolds, George Edwin; Jewell.
SOPHOMORES, 8.

FRESHMEN.

FOUR-YEAR COURSE.

Draper, William; Lawrence.

Howard, Roscoe David; Peck.

FRESHMEN, 2.

SPECIALS.

Barnes, Clarence Irl; Lewis.
Dick, Lester Otho; Norcatur.

Osborn, John Lynn; Lawrence.
Retter, Frederick Bryan; Leavenworth.
SPECIALS, 4.

SCHOOL OF MEDICINE.

SENIORS.

Black, Donald Ray; Columbus.
Dail, Oran Columbus; Lawrence.
Davis, Robert Crenshaw; Kansas City.
Dixon, Otto; Mound Valley.
Drake, Paul McCheyne; Kansas City.
Marchbanks, Howard Earl; Pittsburg.

McKinlay, Chauncey Angus; Wichita.
Ockerblad, Nelse Frederick; Kansas City.
Schwein, Bertha Olivia; Rosedale.
Turner, Herschel Roy; Hoxie.
Weaver, Ross Eberhardt; Concordia.
West, Harry Andrew; Yates Center.

SENIORS, 12.

JUNIORS.

Alberty, Watie Murl; *Westville, Okla.*
Allen, Lewis George; Lenexa.
Baker, Wilbur Arthur; Holton.
Boone, Horace Ratliff; Highland.
Castles, John Edgar; Lawrence.
Classen, Arthur Charles; Rosedale.
Coleman, Herbert Rockwood; Lawrence.
Conner, Samuel Walters; Atchison.
Diveley, Rexford Leon; Hutchinson.
Edmiston, Roy Hammond; Americus.

Olsen, Henry Herman; Baker.
Peterson, Daniel; Atlanta.
Ragle, Harold Eugene; Chanute.
Riney, Claude Raymond; Dodge City.
Rose, Charles William; Floral.
Swinney, Raymond Wooldridge; Rosedale.
Vermillion, Earl LeRoy; Tescott.
Wallendorf, Leo Henry; *Kansas City, Mo.*
Ward, Roscoe; Belleville.
Whitaker, William Otto; Kiowa.

JUNIORS, 20.

SOPHOMORES.

*Enrolled in another school of the University.

Ball, Bertus Clyde; *Mansfield, Tex.*
*Belknap, Paul Edward; Atlanta.
*Bresette, Louis Lafe; Topeka.
*Campbell, Fred Bennett; Esbon.
*Coffey, Frank Ellsworth; Kansas City.
*Culter, Robert Clyde; Emporia.
*Eastlake, Alfred O.; *Kansas City, Mo.*
*Gloyn, Louis Boucher; Kansas City.
*Grady, Grover Quinton; Alden.
*Henderson, Harry Edwin; Alma.
Howden, Thomas Lawrence; *St. Joseph, Mo.*
James, William Earl; Spring Hill.
*Klepinger, Dayton Parker; Lawrence.

Lawless, Theodore Kenneth; Pratt.
Leonard, Maude Webster; Wichita.
*Milligan, Jay McDonald; Olathe.
*Miner, Oliver William; Sublette.
*Oechsli, Waldo Raymond; Lawrence.
*Owens, Hugh Henry; Chanute.
*Padgett, Earl Calvin; Glasco.
Sundwall, Olof; Lawrence.
*Tihen, Henry Nelson; Andale.
*West, Ray Augustine; Anthony.
*Whitney, Elmer Lemuel; Talmage.
Yankoff, Peter Demstroof; Lawrence.

SOPHOMORES, 25.

FRESHMEN.

*Albaugh, Houghton Samuel; Topeka.
*Anderson, Forrest Nelson; Lawrence.
*Berger, Ben J.; Halstead.
*Booth, Myron Murray; Hutchinson.
*Bowman, William Walter; Topeka.
*Burke, Esther Margaret; Lawrence.
*Burkhead, Carl Roscoe; Centerville.
*Cazier, Lawrence Wallace; Wakarusa.
*Collins, Ralph Kable; Lawrence.
*Colt, James Dennison; Manhattan.
*Daniel, Harvey Oscar; Lawrence.
*Dyche, Lewis Lindsay; Lawrence.
*Emerson, Ralph Waldo; Osborne.
*Engel, Lawrence Power; Lawrence.
*Fuller, Clinton Charles; Peabody.
*Funk, Cornelius Herbert; Hillsboro.
*Gempel, Eugene F.; Leavenworth.
*Gilkey, Harry Melvin; Richmond.
*Gilles, Clifford Lawrence; Kansas City.
*Green, Stanley L.; Lawrence.
*Hardy, Frances Mabel; Altoona.
*Hashinger, Edward Hagerman; Lawrence.
*Hepler, Russell Calvin; Cottonwood Falls.
*Hill, Lee Verne; Osborne.

*Kryder, George Buchanan; Lawrence.
*Marquis, George; Leavenworth.
*Mella, Sherman E.; Leavenworth.
*McEwen, Fred J.; Iola.
*McIlhenney, Robert C.; Conway Springs.
*Nelson, Charles Sumner; Westphalia.
*Nelson, Lawrence Strong; Iola.
*Neptune, Harold Everett; Salina.
*Nodurft, Elmer J.; Lawrence.
*O'Donnell, Frederick Ross; Ellsworth.
*Ogg, Francis Willard; Lawrence.
*Pace, John David; Parsons.
*Potter, Rayburn S.; Clifton.
*Pratt, Hazel Helen; Lawrence.
*Riste, Rose Alma; Lawrence.
*Scholer, Henry Charles; Bonner Springs.
*Stockton, Marcellus Lowry; Gridley.
*Stofer, Dar Delos; *Kansas City, Mo.*
*Tippin, Ernest Elwood; Sterling.
*Trimble, Roy Ira; Sterling.
*Uhls, Kenneth Benton; Overland Park.
*Weaver, Glenn Shellborn; Concordia.
*Weaver, Joe Senn; Concordia.
*Yates, Blyden William; Lawrence.

FRESHMEN, 48.

SPECIALS.

Reece, Hal Edward; Thayer.

SPECIAL, 1.

THE TRAINING SCHOOL FOR NURSES.

CLASS OF 1916.

| | |
|--|--|
| Burkholder, Nellie Perle; Marion. | Stewart, Hettie M.; <i>Ashland, Neb.</i> |
| Hogrebe, Sigrid L.; <i>Fairland Heights, Mo.</i> | Stratton, Grace Lucile; De Soto. |
| Kinlund, Ida Victoriano; Ashton. | Terry, Elsie; Baldwin. |
| Leary, Letha Thelma; <i>Zearing, Iowa.</i> | Yowell, Virginia Maude; Wichita. |

CLASS OF 1917.

| | |
|--|---|
| Greene, Ruth Agnes; <i>Independence, Mo.</i> | McCoy, Hannah Elsie; <i>Rogers, Ark.</i> |
| Hennessey, Nell May; <i>Kansas City, Mo.</i> | Omer, Stella Ethel; Mankato. |
| Long, Mary Alice; Liberal. | Powers, Roberta H.; Osborne. |
| Markley, Corynne Ellen; Minneapolis. | Wilhite, Nina May; <i>Bartlesville, Okla.</i> |
| Myers, Golda Duncan; Chanute. | Woolverton, Alice Jean; Abilene. |

CLASS OF 1918.

| | |
|--------------------------------------|--------------------------------|
| Duvall, Minnie Alice; Arkansas City. | Mitts, Augusta Jane; Columbus. |
| Hall, Mabel Fern; Scammon. | Paul, Lena Lee; Loring. |
| Holverstadt, Frances Lucile; Oxford. | |

CLASS OF 1919.

| | |
|---------------------------------|---------------------------------------|
| Ehrman, Mrs. Ada; West Mineral. | Montee, Emma Lelia; Cherokee. |
| Gragg, Hazel; Arkansas City. | Roberts, Suzanne, <i>Benton, Ark.</i> |
| Kessler, Dora; Hutchinson. | Stockton, Blanche, Kansas City. |
| McKee, Mary Edith; Caney. | NURSES, 30. |

SCHOOL OF EDUCATION.

GRADUATES.

* Enrolled in another school of the University.

- *Anderson, Forest Nelson; Lawrence.
- *Arnett, Ila Maud; Lawrence.
- *Baerg, Gerhard; Hillsboro.
- *Butts, Nannie; *Dearborn, Mo.*
- *Cowper, Mrs. M. O. Thompson; Lawrence.
- *Cruzan, Albert; Lawrence.
- *Day, Hazel; Canton.
- *Eaton, Ella Jane; Highland.
- *Eldridge, James; *Dewey, Okla.*
- *Esping, Lydia Constantia; Lindsborg.
- *Poster, James Ralph; Lawrence.
- *Gault, Cora Hazel; Wellington.
- *Harnly, Paul Witmore; McPherson.
- *Hetzel, Edna Lucile; Waverly.
- *Higgs, Mamie Alberta; Hartford.
- *Huff, Bessie Maree; *Muskogee, Okla.*
- *Jones, Cassie Fern; Wichita.
- *Kleihege, George William; Lawrence.
- *Lacy, Lester Daniel; Lawrence.
- *Lovejoy, Elizabeth Burt; Lawrence.
- *McQuiston, Raymer; Independence.
- *Myers, Anna Groves; Lawrence.
- *Olney, Avery Fincher; Lawrence.
- *Patterson, Oliver Wellington; Lawrence.
- *Simpless, Eleanor Ann; Lawrence.
- *Smyth, Miriam; Eureka.
- *Trimble, Eva Laura; Sterling.
- *Wood, Bessie Marian; Strong City.
- *Horne, Samuel Henry; *Enid, Okla.*

GRADUATES, 29.

SENIORS.

- *Babcock, Amelia G.; Lawrence.
- *Bartberger, Ethel Pauline; Merriam.
- *Bennett, Edward Earl; Stafford.
- *Bischoff, Adele; Washington.
- *Bordenkircher, Caecilia M.; Burlington.
- *Braden, Zella Olive; Elsmore.
- *Carpenter, Izetta Pearl; Kansas City.
- *Carr, Merritt Virginia; Leavenworth.
- *Chadwick, Eva Edith; Bonner Springs.
- *Champlin, Mable Louise; Phillipsburg.
- *Chase, Zula; Hutchinson.
- *Coleman, Margaret; Lawrence.
- *Cornforth, Marguerite; Lawrence.
- *Cory, Luella E.; Lansing.
- *Covey, Chester Claude; Baxter Springs.
- *Craig, Louise Harriet; Lawrence.
- *Crawford, Agnes Teefor; Girard.
- *Cress, Beulah L.; Clements.
- *Cruzan, Amy Stark; Lawrence.
- *Dains, Clara Gene; Lawrence.
- *Davis, Beulah; Hutchinson.
- *Davis, Margaret Rogers; Lawrence.
- *Dodds, William Hector; Sterling.
- *Dow, Jonathan Mahaffie; Lawrence.
- *Draper, Elfrieda; Lawrence.
- *Dyche, Ruth Ophelia; Lawrence.
- *Elliott, John David; Holliday.
- *Fitzsimmons, Lee Joshua; Cunningham.
- *Foster, Edward W.; Lawrence.
- *Frelenmuth, Alma Marjorie; Tonganoxie.
- *Gephart, Helen L.; Lawrence.
- *Gill, Anna Lee; Lawrence.
- *Gilmore, Isabel Elizabeth; Lawrence.
- *Goddard, Frank; Lawrence.
- *Gordon, Virgil Mae; Fort Scott.
- *Greer, Helen; Lawrence.
- *Grimes, Cecil Ellen; Lawrence.
- *Hale, Florence Evelyn; Lawrence.
- *Hammer, Zetha; *Salt Lake City, Utah.*
- *Hawkins, Ella Avonia; Lincoln.
- *Henry, Gladys Margaret; Lawrence.
- *Herron, Allen Murray; Wellington.
- *Hildinger, Lucile; Lawrence.
- *Hoadley, Corda Lea; Fort Scott.
- *Holmes, Opal A.; Lawrence.
- *Hopkins, Marjorie Louise; Ellsworth.
- *Hosford, Vanetta; Lawrence.
- *Hurst, Hazel Magaline; Wichita.
- *Imus, Avis Louise; *St. Joseph, Mo.*
- *Irvin, Roy Robert; Lawrence.
- *Jaqua, Josephine; St. Francis.
- *Jamieson, Norma Janet; Burlingame.
- *Jennerson, Leah Matie; Lawrence.
- *Jennings, Leonora; Winfield.
- *Johnson, Samuel Augustus; Troy.
- *Keeler, Ethel Myrtle; Lawrence.
- *Kennedy, Nellie Irene; Lawrence.
- *Kent, Clara Helen; Pleasanton.
- *Kerns, Bertha; Chanute.
- *Kincaid, Amy Jean; Lawrence.
- *King, Rose Gertrude; Wichita.
- *Kohman, Emma Anna; Dillon.
- *Lamar, Guy Martin; Kansas City.
- *Lobdell, Gertrude Nelle; Great Bend.
- *Lorimer, Margaret Emily; Olathe.
- *Macoubrie, Kathleen Elizabeth; Olathe.
- *Marak, Josephine Clara; Lawrence.
- *Melville, Edward William; Eudora.
- *Michener, John Morrison; Wichita.
- *Miller, May Pauline; Wichita.
- *Moore, Guy R.; Lawrence.
- *Moore, Lelia Z.; Holton.
- *Moore, Minnie Marilla; Lawrence.
- *Morrow, William Clay; Blue Mound.
- *Moser, Martha Minnie; Blue Rapids.
- *Mullen, Blanche Veronica; Hutchinson.
- *Murphy, Bess Marie; Topeka.
- *Myers, Ethel Pearl; Lawrence.
- *McCanles, Lulu Lorena; Lawrence.
- *McCune, Frances Ethel; Formoso.
- *McKay, Laura L.; Longton.
- *McKown, Dorothy; *Kansas City, Mo.*
- *McCauley, Evelyn; Herington.
- *McCulloch, Harry Van; Lawrence.
- *Nelson, Naomi Olive; Topeka.
- *Nutt, Hubert E.; Lawrence.
- *O'Brien, Ida; Independence.
- *Oldridge, Mary B.; Lawrence.
- *Parnell, Mabel; Lawrence.
- *Peairs, Ruth; Lawrence.
- *Peck, Evelyn Mayme; *Westboro, Mo.*
- *Perry, Mabel; *Kansas City, Mo.*
- *Piotowski, Edith Agnes; Lawrence.
- *Plowman, Ruth Anita; Mayetta.
- *Powell, Drexel; Lawrence.
- *Ramsey, James Blaine; Garnett.
- *Redmond, Mabel Ethel; Lawrence.
- *Rhudy, Florence; Troy.
- *Robinson, Antoinette; Oswego.
- *Roessler, Emma Beatrice; Nashville.

SENIORS—continued.

- *Rose, Sibyl Frances; Rosedale.
- *Russell, Mary Ruth; Newton.
- *Sage, Lucile Mayne; Concordia.
- *Sallee, Bertha V.; Hutchinson.
- *Saunders, Lella Glayd; Lawrence.
- *Sellers, James Lee; Neosho Rapids.
- *Sheidenberger, Florence R.; Leavenworth.
- *Shomber, Bruce Garrett; Ottawa.
- *Simmons, Stella; Lawrence.
- *Simpson, Naomi Corene; Topeka.
- *Sitzler, Pearl; Lawrence.
- *Slade, Anna Marie; Oskaloosa.
- *Smith, Bertha May; Kansas City.
- *Smith, Frank Kenneth; Ottawa.
- *Smith, Ralph Henry; Lawrence.
- *Spake, Mildred Dorothy; Kansas City.
- *Sterling, Allen; Lawrence.
- *Stewart, Laura Frances; Lawrence.
- *Stiller, Charles M.; Florence.
- *Streeter, Helen Marie; Kansas City.
- *Stubbs, Stella; Lawrence.
- *Swanson, Esther Ethel; Marquette.
- *Taylor, David G.; Sedgwick.
- *Thiessen, Emma; Beloit.
- *Thomas, Helene Mary; Lawrence.
- *Thorpe, Helen Gertrude; Morganville.
- *Trant, Helen K.; Perry.
- *Travis, Chester Earl; Coffeyville.
- *Trueblood, Asa James; La Harpe.
- *Weaver, Jennie Kathleen; Blue Mound.
- *Weltmer, Loren Edward; Smith Center.
- *Wilhite, Bessie; Rosedale.
- *Williams, Daisy Lucile; Osage City.
- *Wolf, Eleanor Adelia; Lawrence.
- *Wolf, Lillian Frances; Lawrence.
- *Woolsey, William Edwin; Formoso.
- *Wuthnow, Edwin William; Dillon.

SENIORS, 137.

JUNIORS.

- *Ainsworth, Lydia L.; Lyons.
- *Anderson, Freda Emma May; *Pueblo, Colo.*
- *Anderson, Mabel; Lawrence.
- *Anderson, Zella May; Lawrence.
- *Angvine, Dorothy Lou; Lawrence.
- *Atkinson, Lila; Lawrence.
- *Battaile, Sallie Catherine; Lawrence.
- *Beckley, Grace; Lawrence.
- *Bixby, Abigail Cornelia; McPherson.
- *Blackburn, Vera Edith; Larkinburg.
- *Blackwelder, Will; Isabel.
- *Breakie, Allan Lenard; Lawrence.
- *Brown, Dorothy Thornton; *Joplin, Mo.*
- *Brown, Nettie Belle; Peabody.
- *Cain, Augustus Robert; Pittsburg.
- *Carson, Hazel Ellene; Ashland.
- *Castles, Ruth; Lawrence.
- *Cole, Stella Mae; Lawrence.
- *Crouch, Alice Amelia; Lawrence.
- *Cruzan, Evelyn May; *Bethany, Mo.*
- *Daniels, Ruth Natalie; Hiawatha.
- *Davidson, Roy; Nickerson.
- *Dielmann, Reta Hazel; Winfield.
- *Dixon, Jessie Lucille; Mound Valley.
- *Dunigan, Florence Esther; Lawrence.
- *Duvall, Alice Lucy; Hutchinson.
- *Dykes, Ada; Lebanon.
- *Ecroyd, Guy L.; Arkansas City.
- *Elliott, Arthur Edward; Lawrence.
- *Elmore, Mabel Marshall; Tecumseh.
- *Fletcher, Liona Blanche; *Lamar, Mo.*
- *Foster, Nellie; Olathe.
- *Foster, Ruth Mitchell; Topeka.
- *Frisbie, Helen Gertrude; Oskaloosa.
- *Gallagher, Marie Helen; Lawrence.
- *Gelvin, Clyde R.; Pratt.
- *Goldsworthy, Ruth; Lawrence.
- *Govier, Mary Louise; *Kansas City, Mo.*
- *Graff, Marie Octavia; Topeka.
- *Grampp, Frederick William; Lawrence.
- *Gregory, Marguerite; Coffeyville.
- *Grooms, Minnie Lesley; *Springville, Utah.*
- *Hall, Gail; McPherson.
- *Hammond, Percy Don; Lawrence.
- *Harris, Cathlene Rose; Eudora.
- *Hedrick, Louise Nancy; *Kansas City, Mo.*
- *Heizer, Margaret Rosamond; Osage City.
- *Hilsman, Itasca Powell; Kansas City.
- *Hoar, Florence Eckert; Lawrence.
- *Hostette, Anita Miller; Lawrence.
- *Huffman, Mona Clare; Columbia.
- *Hunter, Chauncey Dewep; Abilene.
- *Hurley, Gertrude Ellen; Leavenworth.
- *Irvine, Frances; Fort Scott.
- *Kilgore, Violet Georgia; Wichita.
- *Kirkendall, Jeanne Mabel; Natoma.
- *Klinck, Frances Marian; Hutchinson.
- *Krehbiel, Luella Minerva; Moundridge.
- *Lahn, Anita; Wichita.
- *Lehman, Lola May Wikin; Olathe.
- *Luckan, Gladys May; Lawrence.
- *MacKinnon, Inez May; Kansas City.
- *Markham, Dorothy; Pittsburg.
- *Martin, Ethel Marguerite; Lawrence.
- *Miller, Dorothy; Topeka.
- *Miller, Harold Cecil; Chanute.
- *Moore, Helen; Hutchinson.
- *McDonnell, Agnes Marie; Kansas City.
- *McElvain, Margaret; Hutchinson.
- *McKinney, Mary Emma; Iola.
- *McNutt, Carolyn; *Kansas City, Mo.*
- *Palmer, Lawrence Alfred; Garnett.
- *Patterson, Helen Marguerite; Victoria.
- *Percival, Harry Farlow; Arkansas City.
- *Powell, Artemesia; Lawrence.
- *Ramsey, Leona Daisy; Lawrence.
- *Ray, Jennie Mabel; Lawrence.
- *Read, Marion Harvey; Towanda.
- *Rearick, Anna Christine; *Aurora, Mo.*
- *Reeves, Irene Janette; Dodge City.
- *Rively, Isidore; Kansas City.
- *Rodkey, Fred Stanley; Blue Rapids.
- *Ruhlandt, Helen Hays; Osawatomie.
- *Russell, Jean; Lawrence.
- *Sankee, Rachel; Lawrence.
- *Scott, Iva Essie; Solomon.
- *Sheffy, Marion; Wichita.
- *Shuey, Jane C.; Natoma.
- *Smith, Agnes May; Kansas City.
- *Smith, Esther Louise; Welda.
- *Smith, Lucile Mary; Lawrence.
- *Soller, Dena A.; Washington.
- *Sparr, Dora Echo; Lawrence.
- *Spicer, Miriam Russel; Lawrence.
- *Stevenson, Mary Ruth; Paola.
- *Stoll, Elva Lucile; Lone Elm.
- *Stotts, Grace Merle; Bonner Springs.
- *Swanson, Carl A.; McPherson.
- *Swanson, Lillian Victoria; Marquette.
- *Swearingen, Orpha G.; *Morrison, Okla.*
- *Talbot, Lucille Frances; Lawrence.
- *Testerman, Iva Bernice; Lawrence.
- *Thomas, Edith Helen; Lawrence.
- *Thompson, Janet Hammond; Whitewater.
- *Trinkle, Josie M.; Lawrence.
- *Ulrich, Elizabeth Lucile; Lawrence.
- *Utermann, Auguste Margaret; Lawrence.
- *Utermann, Marie Theresia C.; Lawrence.
- *Van Horn, Amy Gladys; Lawrence.
- *Walling, Artie Via; Lawrence.
- *Wedell, Emma Caroline; Lawrence.
- *Willmann, Edna Marie; Lawrence.
- *Woodruff, Marie; Lawrence.

JUNIORS, 113.

SPECIALS.

- *Amos, Thyrsa Wealtha; Spivey.
- *Bartley, Wanda Marie; Florence.
- *Bitzer, Gladys Virginia; Lawrence.
- *Bocker, Helen Arzelia; Solomon.
- *Boman, Grace Ruby; Chanute.
- *Boswell, Jennie; Salina.
- *Buchanan, Marie Estelle; Lawrence.
- *Bunten, Jessie Muir; Scranton.
- *Canfield, Mina Rose; Holton.
- *Chaplin, Gladys Albertina; Edgerton.
- *Dale, Olivia Lanyon; Lawrence.
- *Davis, Edna M.; Chanute.
- *DeForest, Margaret May; Lawrence.
- *Diver, Dorothy Elizabeth; Lawrence.
- *Forsythe, Anna Elizabeth; Edgerton.
- *Fox, Ruth Elyda; Lawrence.
- *Gaskill, Gussie Esther; Lawrence.
- *Gillett, Josephine; Kingman.
- *Goldsworthy, Maude Edith; Lawrence.
- *Harper, Adda Mary; Topeka.
- *Jarvis, Mary Anna; Arkansas City.
- *Kernodle, Julia Ruth; *Grand View, Mo.*
- *Libbey, Lois; Altamont.
- *Miesse, Lenore; Marion.
- *Miller, Emily Mary; Independence.
- *Montaldo, Lena; *Noel, Mo.*
- *Mowrer, Ernest Russell; Lost Springs.
- *Murphy, Lois Amelia; Goodland.
- *Nungesser, Ella; Lawrence.
- *Riddle, Dorothy Winifred; Herington.
- *Robinson, Marie; Eudora.
- *Roebke, Doris Pauline; Holton.
- *Rowles, Helen; Wamego.
- *Smith, Agnes Robertson; *Springfield, Ill.*
- *Stone, Almeron James; Lawrence.
- *Stunz, Mary Gladys; Edgerton.
- *Swanson, Edna E.; Marquette.
- *Swanson, John Frederick; Marquette.
- *Topping, Helen; Cedar Point.
- *Whitcroft, Ruby Harriett; Lawrence.
- *Windett, Florence L.; Quenemo.
- *Woelk, Eda Louise; Russell.

SPECIALS, 42.

SUMMER SESSION.

* Also in current session.

| | | |
|----------------------------|--|-------------------|
| Ackers, Frank C. | Sociology, | Abilene. |
| Adams, Earle J. | Chemistry, | Windom. |
| Adler, Corinne E. | Psychology, Botany, | Ottawa. |
| *Albaugh, Houghton, S. | Sociology, English, Entomology, | Topeka. |
| *Alberty, Watie M. | Medicine, Physics, Philosophy, | Westville, Okla. |
| Allen, Frances. | Music, | Lawrence. |
| Allen, Lester M. | Law, | Lawrence. |
| *Allen, Lewis G. | Medicine, Physics, Philosophy, | Lenexa. |
| *Allvine, Glendon. | Geology, Philosophy, | Kansas City. |
| Alsop, Florence May. | Zoölogy, | Wakefield. |
| Altman, C. A. | Chemistry, | Lawrence. |
| Anderson, Caroline Ruth. | Music, | Lawrence. |
| *Anderson, Forrest Nelson. | Entomology, | Lawrence. |
| Anderson, George A. | Chemistry, | Ottawa. |
| Anderson, James C. | Sociology, | Lawrence. |
| Armstrong, Nan R. | Zoölogy, | Lawrence. |
| *Arndt, Elmer R. | Sociology, Journalism, Philosophy, | Lawrence. |
| *Arnett, Maude. | Music, | Lawrence. |
| *Arnold, Ernest C. | Chemistry, | Cottonwood Falls. |
| Arnold, G. Brandt. | Chemistry, | Newton. |
| Ashton, Madeline. | Philosophy, German, | Lawrence. |
| Babb, Edith. | Home Economics, Design, | Lawrence. |
| *Babcock, Amelia Gregg. | Botany, Education, | Lawrence. |
| *Bagby, Grayce. | Music, | Lawrence. |
| Bailey, Austin. | Physics, | Lawrence. |
| Baird, Maude Marie. | Entomology, | Clay Center. |
| Baker, Violet H. | English, Sociology, History, | Topeka. |
| *Baker, Wilbur A. | Medicine, | Holton. |
| *Barba, E. C. | Law, | Lawrence. |
| *Barnes, Nellie. | German, History, | Gardner. |
| *Battaille, John F. | Law, Economics, | Lawrence. |
| Baysinger, Chas. E. | History, Mathematics, Education, | Hartford. |
| Beach, Clara Alice. | English, | Melvorn. |
| *Beach, Geo. H. | Law, | Lawrence. |
| Beck, Gladys. | Entomology, | Kansas City. |
| *Beckley, Grace. | Botany, Design, | Lawrence. |
| Beckstrom, Hedvig. | History, | Lindsborg. |
| Becktell, Bessie B. | Education, | Macksville. |
| Benner, James W. | Medicine, | Manhattan. |
| *Bennett, Edward Earl. | History, English, | Stafford. |
| Bennett, Nora Minerva. | Home Economics, | Lawrence. |
| *Berger, Ben J. | Economics, Sociology, | Halstead. |
| *Bigelow, Dorothy. | French, Mathematics, Psychology, | Oberlin. |
| Blackmar, Dorothy. | Music, | Lawrence. |
| Blackmar, Mrs. F. W. | Music, | Lawrence. |
| Blair, John Alvin. | English, History, | McPherson. |
| *Blaylock, Fred Orville. | Chemistry, | De Soto. |
| Blum, Nell. | Education, | Lyndon. |
| Bohl, Lillian. | Design, | Kansas City. |
| *Bordenkircher, Gaecilia. | English, French, | Burlington. |
| Borton, Martha C. | Physics, | Harold. |
| Bowman, O. R. | Botany, | Hugoton. |
| *Boynton, Roland E. | Law, | Lawrence. |
| Bradley, C. E. | History, Public Speaking, | Winfield. |
| Bradley, Jessie M. | French, | Pence. |
| Brand, Virginia S. | History, Public Speaking, | Elk City. |
| Brant, James L. | Education, German, Physical Education, | Lawrence. |
| *Brown, Alice L. | Botany, Zoölogy, | Lawrence. |
| Brown, Florence A. | Zoölogy, | Conneaut, Ohio. |
| Brown, Hattie Beach. | Education, Physical Education, | Lawrence. |
| Brown, Lola Bell. | Education, Botany, | Lawrence. |
| Brown, Mary Ethel. | Music, | Lawrence. |
| *Brown, Nettie B. | Economics, Psychology, Sociology, | Peabody. |
| Brush, Elizabeth Harriet. | German, Design, | Lawrence. |
| Brush, Mrs. Olive P. | Design, | Lawrence. |
| *Buchanan, Dwight V. | Entomology, | Lawrence. |
| Buck, Helen Elizabeth. | Music, | Lawrence. |
| *Buckhannan, Joseph P. | English, | Minneola. |
| Burgert, Chester O. | Music, Education, Physics, | Lawrence. |

| | | |
|---------------------------|--|----------------------|
| Bush, Ada C. | Education, | Wagner, N. D. |
| *Cady, Wm. S. | History, Zoölogy, Journalism, Public Speaking, | Fredonia. |
| Caldwell, Martha Belle. | English, | Lecompton. |
| Capes, Jess. | English, Economics, | Concordia. |
| Carl, Elias Nathan. | Education, | Arma. |
| Carpenter, Margaret. | Education, | Oswego. |
| Carpenter, Wm. Weston. | Chemistry, | Lawrence. |
| Carter, Orah O. J. | English, French, | Lawrence. |
| *Castles, John E. | Medicine, | Lawrence. |
| *Castles, Ruth Minerva. | Chemistry, | Lawrence. |
| Cavanaugh, Marie Agnes. | German, | Dighton. |
| *Chapman, Ralph. | Entomology, | Clay Center. |
| *Charles, Roscoe C. | Botany, Journalism, | Stafford. |
| Charlton, Marion. | English, Mathematics, | Hesston. |
| *Chinery, Frank L. | Spanish, Sociology, Mathematics, | Lawrence. |
| *Clark, Lee E. | Chemistry, | Winchester. |
| *Clark, Rowland J. | Chemistry, | St. Joseph, Mo. |
| Clavin, Maud E. | Design, Public Speaking, | Olathe. |
| Colbert, Jetta Mabel. | German, Latin, | Alton. |
| Coldwell, M. I. | History, | Lebanon. |
| *Coleman, Margaret. | Education, | Lawrence. |
| Colyer, Edward Everett. | Sociology, Mathematics, | Dighton. |
| Connor, David Ewing. | History, German, Spanish, Botany, | Lawrence. |
| Cook, Julius Edgar. | Education, Spanish, Botany, | Ness City. |
| *Cope, John Gardner. | Botany, Journalism, Philosophy, | Lawrence. |
| *Cornforth, Marguerite. | Education, English, | Lawrence. |
| *Cotter, James Rachel. | Geology, Sociology, Psychology, | Kansas City, Mo. |
| *Cowgill, Elvyn Spencer. | Economics, | Lawrence. |
| Cox, Pansy. | English, Education, | Wichita. |
| *Craig, Louise Harriet. | English, Sociology, | Lawrence. |
| *Crawford, Agnes Telfer. | French, Spanish, | Girard. |
| Creekbaum, Mary. | English, | Kansas City. |
| Cressman, Ada Beatrice. | Home Economics, | Lawrence. |
| *Cronwell, Harry Hardin. | German, English, Mathematics, | Belle Plaine. |
| Crowley, Corinne Ruth. | Spanish, | Lawrence. |
| *Crowley, John James. | Entomology, | Lawrence. |
| *Crum, Harry Edwin. | Chemistry, | Lawrence. |
| *Cruzan, Albert. | Sociology, | Lawrence. |
| *Cruzan, Amy Stark. | Sociology, Psychology, | Lawrence. |
| Cummins, Alvin Pender. | Education, | Winfield. |
| *Curry, Lewis A. | Zoölogy, | Dunavant. |
| *Dail, Oran C. | Zoölogy, | Lawrence. |
| *Daniel, Harvey Oscar. | Physics, Philosophy, | Lawrence. |
| Daniels, Anna. | German, English, Physical Education, | Hiawatha. |
| *Daniels, Ruth N. | English, Sociology, German, Physical Ed., | Hiawatha. |
| Daum, Bessie. | Education, History, | Lawrence. |
| Davies, Sophia. | English, Education, | Lebo. |
| *Davis, Bryan L. | Sociology, History, Philosophy, | Lawrence. |
| *Davis, Margaret Rogers. | Education, | Lawrence. |
| *Deaver, Ray Emerson. | Physics, Chemistry, | Fairview. |
| *DeForest, Margaret Mae. | English, Psychology, Music, | Lawrence. |
| *Deibel, Maria. | French, Mathematics, Public Speaking, | Lawrence. |
| *Deibert, Olin. | Chemistry, | Lawrence. |
| *DeRoin, Cecil Sunshine. | Public Speaking, French, English, | White Cloud. |
| Deupree, Grace. | Mathematics, | Lyons. |
| *DeVine, John Randolph. | Law, | Cherryvale. |
| Devlin, John A. | Education, Sociology, | Fort Scott. |
| Devlin, Mrs. J. A. | English, | Fort Scott. |
| Dewey, Chas. H. | Sociology, History, Economics, Music, | Elk City. |
| Dixon, Harry W. | English, Chemistry, | Kansas City. |
| *Dodds, W. Hector. | Economics, Psychology, Sociology, | Lawrence. |
| Dolbee, Myrtle Elizabeth. | German, | Lawrence. |
| Doty, Frances. | Geology, English, History, | Hutchinson. |
| Dougherty, Lucy Taft. | German, Mathematics, French, | Kansas City. |
| *Dow, Jonathan Mahaffie. | Education, Psychology, English, | Lawrence. |
| *Draper, Elfrieda. | Spanish, Latin, | Lawrence. |
| Draper, May Lillian. | Spanish, Psychology, | Lawrence. |
| Dreier, Albert A. | History, | Wetmore. |
| *Dryden, Lockie. | Chemistry, Mathematics, | Larned. |
| Dunmire, Ray Allen. | Law, Zoölogy, | Lawrence. |
| *Dyche, Junius W. | Entomology, | Oklahoma City, Okla. |
| *Dyche, Ruth O. | Education, Design, English, | Lawrence. |
| Dyer, Josephine Rose. | German, | Baldwin. |
| *Dykes, John Henry. | Physics, | Lawrence. |
| Eaton, Douglas Oren. | Education, | Lawrence. |
| Eby, Alta Mae. | Education, Mathematics, | Hesston. |
| *Edmonson, Ellen. | Design, Mathematics, | Newton. |
| Edwards, Ray F. | Sociology, | Lawrence. |
| Elledge, Clara E. | English, Public Speaking, Latin, | Burlingame. |
| Ellenberger, Rush Walter. | History, Sociology, Physics Ed., | Bazine. |

| | |
|---|------------------|
| Ellis, Ruth. Public Speaking, Design, | Lawrence. |
| Ellsworth, Bertha. English, Latin, | Lawrence. |
| *Emby, C. Porter. History, Journalism, Economics, | Lawrence. |
| Emerson, Clarence W. Law, Economics, | Chanute. |
| Engel, Agnes Estelle. German, Sociology, Education, | Lawrence. |
| *Engel, Lawrence Power. Chemistry, Botany, | Lawrence. |
| Enss, Gustav. German, English, | Newton. |
| *Evans, Harry Parker. Geology, Chemistry, | Edgerton. |
| Evans, William Robert. History, Economics, | Topeka. |
| Everett, Lillian. English, Psychology, | Kansas City. |
| *Ewing, Ruth Edith. Entomology, | Parsons. |
| Faragher, Mrs. Paul V. Bacteriology, | Lawrence. |
| *Farris, O. R. Education, Public Speaking, | Eureka. |
| Fauley, Leon. Psychology, English, | Mt. Hope. |
| *Firestone, Clifford L. Entomology, | Lawrence. |
| *Fisher, Frank J. French, Botany, | Kansas City. |
| *FitzGerald, John H. Law, | Lawrence. |
| *FitzGerald, Linus Conrad. Botany, Mathematics, Zoölogy, | Lawrence. |
| *Fitzpatrick, Earl. French, | Lawrence. |
| Fletcher, Helen. Spanish, Journalism, | Lenexa. |
| *Flintom, L. B. Spanish, | Lawrence. |
| Poster, Alice. Geology, English, | Baldwin. |
| *Foulk, Ruby. English, | Lawrence. |
| Francisco, Olell R. Entomology, | Lawrence. |
| Freark, Christine Beatrice. Entomology, | Lawrence. |
| Freark, Winona. History, Sociology, | Lawrence. |
| Freeman, Marcellus Walter. Bacteriology, | Topeka. |
| Frick, Sheldon. Education, Mathematics, | Lawrence. |
| *Fridley, John B. Geology, Mathematics, Education, | Lawrence. |
| Friend, Helen. Music, | Lawrence. |
| *Funk, C. Herbert. German, Zoölogy, | Hillsboro. |
| Funk, Mrs. P. C. Design, Education, | Lawrence. |
| *Gallagher, Marie Helen. Botany, Public Speaking, | Lawrence. |
| *Garman, Helen Rose. Geology, Psychology, | Lawrence. |
| Garrett, Murle. Economics, Mathematics, | Lawrence. |
| Garrison, George Blaine. Physics, | Eureka. |
| Geelan, Norah. Geology, English, | Lecompton. |
| *Gempel, Eugene P. Medicine, | Leavenworth. |
| Giesel, Frederick Wm. Sociology, History, Education, | Lawrence. |
| Gilkeson, Murray M. English, Public Speaking, Mathematics, Music, History, | Burlingame. |
| *Gilkey, Harry Melvin. Bacteriology, | Richmond. |
| Gill, Anna. English, Education, | Lawrence. |
| *Gillespie, Bernard Andrew. Spanish, Mathematics, | Tulsa, Okla. |
| *Goldtrap, Walter A. Chemistry, | Lawrence. |
| *Govier, Mary Louise. Zoölogy, Psychology, | Kansas City, Mo. |
| *Grady, Archie Verne. History, Geology, Zoölogy, | Lawrence. |
| Granger, Marshall A. French, English, | Lawrence. |
| *Gray, Harry Taylor. Public Speaking, History, | St. John. |
| Green, Alta M. Mathematics, English, Latin, | Olathe. |
| Green, Bessie B. Education, | Coffeyville. |
| Green, Lottie E. Education, | Coffeyville. |
| Green, Maude Lucy. Zoölogy, | Stockton. |
| Greene, Hazel Katharine. Latin, History, English, | Lawrence. |
| *Greer, Helen. Education, | Lawrence. |
| Gregory, W. R. Sociology, English, | Lawrence. |
| Greig, Anne Elizabeth. English, German, | Van Buren, Ark. |
| *Griesa, Theodore S. Zoölogy, | Lawrence. |
| Griest, Erma Belle. Education, | Minneapolis. |
| Griffiths, Arline. Botany, Design, | Lawrence. |
| Griffiths, Glendale. Zoölogy, | Lawrence. |
| *Grinter, Phyllis, J. Physiology, | Lawrence. |
| *Gustafson, Mary. Botany, Education, | Lawrence. |
| *Gwin, Lorena May. Zoölogy, | Lawrence. |
| Hall, Chas. A. Education, | Sterling. |
| *Hamilton, John W. Law, | Pleasanton. |
| *Hanscome, Marcella Morgan. Design, Botany, | Lawrence. |
| Hanson, Millie. German, English, | Arkansas City. |
| Hardy, Frances Mabel. Entomology, | Altos. |
| Harper, Leta Maude. Public Speaking, English, | Lawrence. |
| Harrell, George B. Law, History, | Barnard. |
| *Hart, Pattie. Chemistry, | Grenola. |
| Hartman, John Milton. Economics, | Junction City. |
| Haury, Irwin. French, Spanish, | Newton. |
| *Havenhill, L. D. Medicine, | Lawrence. |
| *Havens, Mrs. Gertrude. Music, | Lawrence. |
| *Heath, W. Rea. Zoölogy, | Kansas City, Mo. |
| Helmick, Dora. Music, | Lawrence. |
| *Herron, Allen Murray. Latin, Sociology, | Wellington. |
| *Hershberger, Helen. Geology, English, | Wichita. |

| | | |
|----------------------------|---|------------------|
| *Hettinger, John A. | Law | Hutchinson. |
| *Hill, Clarence J. | Chemistry | Cawker City. |
| *Hill, Ethel Marian. | Entomology | Lawrence. |
| Hill, Mary Gower. | Music | Lawrence. |
| Hills, Elvert R. | English, History, Sociology | Beaver, Okla. |
| *Hilsman, Itasca. | Botany, Psychology | Lawrence. |
| Himpel, Ella Mae. | Philosophy | Tonganoxie. |
| Hinchman, Eda Lora. | Education | Lawrence. |
| Hite, Ora Floyd. | Education | Merriam. |
| *Hoadley, Cora Lea. | Education, Sociology | Fort Scott. |
| *Hoar, Eckert Florence. | Music | Lawrence. |
| Hodson, H. E. | Mathematics, Education | Wichita. |
| *Hoffmann, Harry William. | Entomology | Lawrence. |
| *Holmes, Opa A. | Entomology | Lawrence. |
| *Holombek, J. A. | Economics, History, Sociology | Kansas City, Mo. |
| Holtzschue, Helen Louise. | German | Lawrence. |
| Hopkins, Annie P. | Sociology, History | Ellsworth. |
| *Hopkins, Marjorie Louise. | Latin, Economics, History | Ellsworth. |
| Horn, Dan L. | German, French | Butler, Ohio. |
| *Hosford, Vanetta. | Entomology | Lawrence. |
| *Housholder, H. Vic. | Zoölogy | Lawrence. |
| Hubbel, Elmer. | Chemistry | Pittsburg. |
| Hull, Harriet M. | History, Education | El Dorado. |
| *Huntington, Forrest W. | German, Sociology, Psychology | Lawrence. |
| *Huntington, Mrs. F. W. | English, Sociology, Mathematics | Lawrence. |
| Hunzicker, Lenora Edna. | English, German, Spanish | Lawrence. |
| Hurley, Mae Eva. | Economics, Home Economics | Moran. |
| Hynds, Mary Belle. | Education, Philosophy | Neodesha. |
| Icke, Lewis Roland. | Mathematics, Education | Burns. |
| *Ireland, Neal Dow. | Law | Florence. |
| Irwin, Roy Robert. | Physics, Geology, Chemistry | Lawrence. |
| Irwin, Gayl Lillian. | Sociology, English, Zoölogy | Lawrence. |
| *Ise, Frank Harold. | Sociology, Public Speaking | Lawrence. |
| *Jackson, Byrdie Delilah. | History, Public Speaking | Kansas City. |
| Jackson, Clara. | Sociology, English | Lawrence. |
| *Jackson, Lloyd E. | Chemistry | Lawrence. |
| Jackson, Maude. | English, History | McPherson. |
| *Jackson, Ruth S. | German, Education | Lawrence. |
| *Jacobs, Jessie Marie. | French, Mathematics | McPherson. |
| Jacquemin, Bessie Helen. | Botany | Topeka. |
| Jeffries, John A. | Education, Sociology | Mulvane. |
| Jensen, A. C. | Zoölogy, Education, Economics | Mt. Pleasant. |
| Johnson, Albert H. | Education, Psychology | Ottawa. |
| Johnson, Carl L. | Chemistry | Topeka. |
| Johnson, Delilah. | English, Mathematics | Beloit. |
| Johnson, Mrs. Gertrude B. | English, History, Mathematics | Severy. |
| Johnson, John Oscar. | Law | Dwight. |
| *Johnson, Samuel A. | Education, Public Speaking | Troy. |
| Johnson, Seraphia Huldah. | Education | Frankfort. |
| *Johnson, William Scott. | Design, Botany | Lawrence. |
| Johnston, Nelle. | English, History, Public Speaking, Entomology, Physical Education | Towanda. |
| *Jolly, D. Eber. | Economics, Psychology, Physical Education | Osage City. |
| Jones, Ernest Clare. | Education, History | Norton. |
| Jones, Hiram T. | Bacteriology | Lawrence. |
| Jones, Madge. | Philosophy | Kansas City. |
| Kanaga, Nina. | Music | Lawrence. |
| Kanode, Edith M. | Botany, Physical Education | Topeka. |
| Karnes, Carrie Mae. | Botany | Lawrence. |
| Kauffman, Gertrude. | Education | Valley Falls. |
| Kaufman, Ed. G. | Sociology | Moundridge. |
| *Keeler, Ethel Myrtle. | Home Economics | Lawrence. |
| Kelsall, Chas. Alderson. | Physics | Lawrence. |
| Kennedy, Mary Hazel. | History | Baldwin. |
| *Kennedy, Zora Madge. | German, History | Lawrence. |
| *Kent, Isabel. | Entomology | Lawrence. |
| Kent, Roy M. | Economics, Journalism | Pleasanton. |
| *Kester, Mrs. Frederick E. | Music | Lawrence. |
| *Ketchum, Pauline. | Music | Lawrence. |
| *Kincaid, Amy Jean. | Education, German | Lawrence. |
| Kinhead, Bell Berdina. | Music | Lawrence. |
| Kinley, Eva G. | French, Economics | Topeka. |
| Kinney, Genieve. | Music | Larned. |
| Kiser, Florence. | History | Lawrence. |
| Kisling, Beatrice. | Mathematics, Education | Kansas City. |
| Kisling, Blanche. | Mathematics, Education | Kansas City. |
| *Klepinger, Dayton P. | Physics | Lawrence. |
| *Klippel, Chester Philip. | Economics, English | Hutchinson. |
| *Kohman, Emma. | Physiology, History | Dillon. |
| *Kreider, Charles Cottier. | Bacteriology | Lawrence. |

| | | |
|-----------------------------|---|------------------|
| Kriegh, Mary Elizabeth. | Home Economics, | Lawrence. |
| Landis, May. | Mathematics, | Lawrence. |
| Lane, Oscar Jasper. | Botany, | Baldwin. |
| *Larimore, Ogilvie Miller. | Bacteriology, Mathematics, | Clifton. |
| *Latimer, Wendell Mitchell. | French, | Lawrence. |
| Lee, Floyd B. | Education, | Lawrence. |
| *Leibengood, Nelle. | Geology, English, Education, | Paola. |
| Light, Naomi. | Education, English, | Lawrence. |
| *Lindsey, Adrian Hobart. | Entomology, | Lawrence. |
| Little, Elizabeth A. | Spanish, English, Education, | Eureka. |
| Lockwood, A. T. Stewart. | Entomology, | Baldwin. |
| Long, Edgar Fauver. | English, | McPherson. |
| *Longabaugh, Hazel. | Music, | Lawrence. |
| *Longenecker, J. Harold. | Entomology, | Lawrence. |
| *Lott, Kenneth H. | Journalism, Law, Economics, | Lawrence. |
| Lovan, Fletcher Adolphus. | Education, | Chanute. |
| Luckan, Charlotte. | Music, | Lawrence. |
| *Luckan, Louise Anna. | Entomology, German, | Lawrence. |
| Luke, Carl Daniel. | Physics, | Lawrence. |
| Lupher, LaDora Grace. | Physical Education, | Lawrence. |
| Lupton, Claribel L. | Zoölogy, | Lawrence. |
| Lux, Alta Marie. | Home Economics, Education, | Topeka. |
| Lyons, Maurice. | Chemistry, Philosophy, | Topeka. |
| *MacGregor, Riley Wm. | Law, | Medicine Lodge. |
| Mackie, Elizabeth. | Music, | Lawrence. |
| Manley, Alma T. | Education, Journalism, | Junction City. |
| Mann, Millie. | English, German, Physical Education, | Lawrence. |
| Manter, Ruby. | Music, | Lawrence. |
| *Marak, Josephine Clara. | Education, | Lawrence. |
| Marlowe, Alice R. | Latin, English, Philosophy, | Hartford. |
| Marshall, R. C. | Psychology, Geology, Education, | Grenola. |
| Martindale, Jessie. | Music, | Lawrence. |
| *Mattoon, Harold Frank. | Law, | Lawrence. |
| May, Robert. | German, Mathematics, Zoölogy, | Holton. |
| Meeks, Hazel. | English, Design, | Kansas City. |
| *Metcalf, Earl Boyd. | Chemistry, | Lawrence. |
| Metcalf, Helen Griffin. | History, | Lawrence. |
| Metsker, Sonora. | Sociology, Zoölogy, Public Speaking, | Lawrence. |
| *Michaels, Hazel. | German, English, | Scranton. |
| Miles, Ward R. | Zoölogy, | Green. |
| Minor, Bennie. | Psychology, | Lawrence. |
| *Minor, George Edward. | Public Speaking, Mathematics, | Lawrence. |
| Mitchell, Claire Winifred. | Education, German, | Geuda Springs. |
| Moody, Floyd Emert. | Economics, History, Education, | Fort Scott. |
| *Moore, Guy Rowley. | History, Geology, Zoölogy, | Lawrence. |
| Moore, Mark Egbert. | History, Sociology, | Leavenworth. |
| *Moore, Minnie. | English, | Lawrence. |
| *Morton, Gertrude S. | History, English, Physical Education, | Topeka. |
| *Moser, Martha. | Botany, Entomology, | Blue Rapids. |
| *Moss, Sidney Adrian. | Law, | Lawrence. |
| Muchmore, Clyde E. | History, | Douglass. |
| Mulsow, Fred W. | Medicine, | Yates Center. |
| *Myers, Ethel. | Home Economics, Economics, Philosophy, | Lawrence. |
| Myers, Warren J. | Botany, | Hutchinson. |
| *McAtee, Viola. | Chemistry, | Lawrence. |
| *McAuley, Auley. | Bacteriology, Chemistry, | Lawrence. |
| *McCanles, Eva J. | German, English, | Lawrence. |
| *McCanles, Lulu L. | Education, | Lawrence. |
| McCauley, Evelyn. | Botany, Sociology, | Hoisington. |
| McCracken, Louise Myra. | Chemistry, Physical Education, | Fredonia. |
| McCrone, Grace. | Botany, Entomology, | Lawrence. |
| *McDonald, Ira Malcolm. | Chemistry, German, | Lawrence. |
| McGuffey, Verne. | Botany, English, | Lawrence. |
| *McKaughan, Henrietta. | History, Psychology, | Edgerton. |
| *McKown, Dorothy. | Education, English, Sociology, | Kansas City, Mo. |
| *McNaught, J. B. | German, Botany, | Girard. |
| *McNeil, Frederick. | French, Entomology, | Lawrence. |
| McPherson, Lula. | History, Sociology, | Chetopa. |
| Neal, Paul R. | Physics, | Lawrence. |
| *Neal, Roy Otley. | Chemistry, | Lawrence. |
| Neel, Ward L. | Education, Physical Education, | Highland. |
| *Nelson, Naomi O. | German, English, Latin, Philosophy, | Topeka. |
| Nelson, William E. | Education, Sociology, Physical Education, | Robinson. |
| Neuschwanger, Amanda. | Botany, Physical Education, | Bloomington. |
| *Newman, Carl S. | English, French, German, | Dighton. |
| Newman, Hazel. | German, | Dighton. |
| *Nodurft, Elmer J. | Medicine, | Lawrence. |
| Nolan, Amelia. | Sociology, Design, | Lawrence. |
| *Nutt, Hubert. | Chemistry, | Lawrence. |

| | |
|--|----------------------------|
| Nystrom, Wendell C. Economics, Education, | Savonburg. |
| O'Brien, Elizabeth D. French, Music, Economics, | Lawrence. |
| *O'Bryan, James T. Sociology, History, | Lawrence. |
| O'Donnell, Henry St. Clair. Medicine, | Lawrence. |
| O'Grady, Mary. Music, | Lawrence. |
| *Oldridge, Mary Belle. Spanish, French, | Lawrence. |
| Olinger, Barbara. Music, | Lawrence. |
| Olinger, Davida. Music, | Lawrence. |
| *Olinger, Stanton. Sociology, | Lawrence. |
| *O'Roke, Earl Cleveland. Zoölogy, | Washington. |
| *Osborne, Edna Pearle. Zoölogy, | Lawrence. |
| Osborne, Mrs. Josephine C. Zoölogy, | Lawrence. |
| Owen, William Otway. Physics, | Caney. |
| Owens, George B. Botany, Philosophy, | Merriam. |
| *Parrish, Madge M. History, Psychology, Sociology, | Lawrence. |
| Paul, Fred S. Mathematics, Sociology, | Garnett. |
| *Pears, Ruth. English, Geology, | Lawrence. |
| *Pearson, John T. Law, | Parsons. |
| Pennington, Celia E. Spanish, English, French, | Altamont. |
| *Perkins Marguerite. Physiology | Lawrence. |
| Perreault, Morris S. Sociology, | Kansas City. |
| *Perry, Mabel. Latin, History, Sociology, Education, | <i>Kansas City, Mo.</i> |
| Phillips, Eda. Education, History, Psychology, | Topeka. |
| *Pinckard, Karl Gibson. Zoölogy, Chemistry, | Lawrence. |
| *Poindexter, Early W. English, Psychology, | Kansas City. |
| Poling, Pearl. French, German, | Phillipsburg. |
| Pontius, Elizabeth. Music, | Lawrence. |
| Porter, Will K. Mathematics, Public Speaking, | Paola. |
| *Powell, Drexel. Education, | Lawrence. |
| Powell, Frances Isabel. English, Design, | Lawrence. |
| Power, Elsie May. Sociology, History, | Baldwin. |
| *Proteh, Rheba. Music, | Lawrence. |
| *Putnam, Ralph Ethan A. Chemistry, | Lawrence. |
| *Querfeld, Dorothy. Botany, Physical Training, | Lawrence. |
| Quick, Hazel Lois. Mathematics, Psychology, | Redfield. |
| Quiring, Peter Frank. Mathematics, Education, | Buhler. |
| Rankin, Lanning. Music, | Hoisington. |
| Rankin, Roy. Bacteriology, | Hoisington. |
| Rayhill, Martha. Mathematics, Education, | <i>Warrensburg, Mo.</i> |
| Raymond, Irene. Sociology, History, | <i>Liberty, Mo.</i> |
| Rearrick, Anna J. English, Zoölogy, Public Speaking, | Lawrence. |
| *Reid, Elsie. Psychology, English, | Norcatur. |
| *Reid, Theodore Carey. History, English, Spanish, | Stafford. |
| Renz, Hazel. Sociology, Physical Education, | Sandusky. |
| *Reynolds, Roy Albert. Chemistry, Entomology, | Lawrence. |
| *Rhine, Elton. Botany, | Washington. |
| Rife, Mildred. English, History, | Anthony. |
| Ritter, C. August. French, Journalism, | Clifton. |
| Roberts, Richard Griffith. Chemistry, Philosophy, | Lyndon. |
| Robinson, Bertha M. Entomology, Education, | <i>Enid, Okla.</i> |
| Robinson, Virgie D. Entomology, Education, | <i>Enid, Okla.</i> |
| Rogers, Bess Mary. History, English, Public Speaking, | Muscotah. |
| *Rogers, James Boyles. Botany, Zoölogy, | Larned. |
| *Rofls, Eugene Leonard. Chemistry, | Lawrence. |
| *Rowe, Sarah Odessa. Botany, Sociology, | Lawrence. |
| Ruppenthal, Jacob Christian. German, | Russell. |
| Ruppenthal, Lloyd Henry. German, Journalism, | Russell. |
| Rush, Elmer E. History, | <i>Kansas City, Mo.</i> |
| *Russell, Gertrude. English, Design, | Lawrence. |
| Ryan, Bessie. History, Education, | Cherryvale. |
| Sabino, Silang. Chemistry, | Lawrence. |
| *Salvesen, Floyd Wilson. Economics, English, | Lawrence. |
| Schenck, George F. Medicine, | Centerville. |
| Schmitt, P. N. S. Education, German, Philosophy, | Marysville. |
| Schultz, Martha. Sociology, History, Latin, Education, | Iola. |
| Seal, Harvey C. History, French, Sociology, | Meriden. |
| Seaver, Wirt D. Education, | Severy. |
| Severns, William H. Economics, | Lawrence. |
| Shafer, Annie Neil. German, Mathematics, Latin, | Olathe. |
| *Shane, W. K. Spanish, | Lawrence. |
| Sharp, W. A. Seward. Sociology, English, | <i>Bacone, Okla.</i> |
| *Sherman, Hal W. German, English, | Lawrence. |
| Shields, Velma Cleo. English, Mathematics, | Paola. |
| *Shinn, Cora. Sociology, Physical Education, | Lawrence. |
| Shklar, Tillie. English, Mathematics, | Kiowa. |
| Simms, John Hickman. History, | <i>St. Joseph, Mo.</i> |
| *Simpson, James Albert. Botany, | Salina. |
| Sisler, Wade Horton. Chemistry, | <i>Water Valley, Miss.</i> |
| *Slade, Anna Maria. Chemistry, | Oskaloosa. |
| *Smith, Clarence. Zoölogy, Chemistry, Medicine, | Lawrence. |

| | |
|--|------------------|
| Smith, Erma Anita. Mathematics, History, | Sharon. |
| *Smith, Esther Louise. Chemistry, | Welda. |
| Smith, Mrs. Frances. English, | Fostoria. |
| *Smith, Frank K. Entomology, | Ottawa. |
| *Smith, Lucile. Chemistry, | Lawrence. |
| *Smith, Lucile. Economics, German, History, Music, | Lawrence. |
| *Smith, Ralph H. Entomology, | Lawrence. |
| *Smith, Wint. Sociology, English, | Mankato. |
| *Smithmeyer, Matilda. Entomology, | Lawrence. |
| *Spake, Mildred Dorothy. Education, History, | Kansas City. |
| Spalding, Harriet M. Botany, | Burlingame. |
| *Spicer, Miriam. Botany, Entomology, | Lawrence. |
| *Sproule, Pauline. Music, | Sedan. |
| Stanton, Guy Kent. Zoölogy, | Enid, Okla. |
| Stark, Dorris. Education, English, History, | Topeka. |
| Stark, Henry Stutely. Education, Mathematics, | Ozawkie. |
| *Stateler, Ernest S. Chemistry, | Minneola. |
| Steckel, Minnie L. German, Public Speaking, | Woodbine. |
| *Steele, DeForest Clement. History, | Lawrence. |
| Stevens, Myra. Economics, | Lawrence. |
| *Stevens, Philip Flint. English, | Lawrence. |
| Stevenson, Helen Weightman. Education, | Topeka. |
| Stewart, Ina G. English, Public Speaking, Sociology, | Wamego. |
| *Stewart, Laura F. English, History, Sociology, | Wathena. |
| Stewart, Robert B. Medicine, | Topeka. |
| *Stillier, Mattison Charles. English, | Florence. |
| *Stone, Walter. Law, | Douglass. |
| Streeter, Nina. Home Economics, | Kansas City, Mo. |
| *Strong, George Eugene. Economics, | Blue Rapids. |
| Stubbs, Roscoe. French, Entomology, | Lawrence. |
| *Studer, William J. German, Psychology, | Atwood. |
| Stump, A. L. Physics, | McPherson. |
| *Sundwall, Olof. Bacteriology, | Lawrence. |
| Swayze, Paul Daniel. Botany, History, | Lawrence. |
| Swingle, Edna L. English, Sociology, | Lawrence. |
| *Swingle, Wilbur W. English, Education, Philosophy, | Lawrence. |
| Talbot, Charles Homer. History, Sociology, | Lawrence. |
| *Talbot, Lucille Frances. Home Economics, | Lawrence. |
| *Tanner, Edward Wadsworth. Botany, Design, | Lawrence. |
| Taylor, Clyde Frank. History, Education, Philosophy, | Lawrence. |
| TenEyck, Oana. Zoölogy, | Kansas City, Mo. |
| *Terry, Sylvester George. Chemistry, | Chanute. |
| Thiele, Edna B. Economics, Education, Music, | Washington. |
| Thomas, C. L. History, Geology, | Lawrence. |
| Thomas, Mary Helene. English, Botany, | Lawrence. |
| Thorpe, Helen Gertrude. Education, | Morganville. |
| Threlkeld, George. History, Economics, | Lawrence. |
| Treece, E. Lee. Zoölogy, Public Speaking, | Centerville. |
| Trees, Ione. Zoölogy, | Sabetha. |
| Trees, Olive Mary. Zoölogy, | Sabetha. |
| Tritt, Alfred G. Education, | Larned. |
| Twente, John Wesley. Education, | Baxter Springs. |
| *Ulrich, Elizabeth Lucile. Philosophy, Botany, | Lawrence. |
| Unruh, Della S. German, History, English, | Larned. |
| VanArsdale, J. Mathematics, | Lawrence. |
| VanZile, Ralph Pierce. Botany, Philosophy, | Manhattan. |
| Vaughn, Cora B. English, | Winfield. |
| Venerable, Elaine Neosho. English, Education, | Lawrence. |
| Vermillion, Earl L. French, Medicine, | Tescott. |
| Vermillion, Lillian. Zoölogy, | Emporia. |
| *Vogel, Arthur D. Law, | Leavenworth. |
| Wait, George Ray. Mathematics, | Penalosa. |
| Walker, Joseph P. Medicine, | Lawrence. |
| Walkling, Elizabeth. Spanish, | Burlington. |
| Walter, Alva Jay. Education, Sociology, | Altamont. |
| Warren, G. M. Sociology, | Smith Center. |
| *Watkins, Charles Boyd. English, Public Speaking, Music, | Blue Rapids. |
| Watson, Charles H. Chemistry, Physics, | McPherson. |
| Watson, Lella. German, Spanish, | Hutchinson. |
| *Weaver, Glenn S. Physics, Chemistry, | Concordia. |
| Webb, Martha Coats. Chemistry, | Caney. |
| *Wedell, Theodore Hugo. History, | Lawrence. |
| Weibel, Leo. N. Chemistry, | Lawrence. |
| *Wellhouse, Walter H. Entomology, | Lawrence. |
| *Weltmer, Loren Edward. Spanish, History, | Smith Center. |
| *Westerfield, Marie. English, | Topeka. |
| Whelan, John Bennett. Bacteriology, Chemistry, | Lawrence. |
| Whitaker, William Otto. History, | Kiowa. |
| Whitcher, Florence Mildred. Latin, English, | Concordia. |
| Whitcomb, S. L. Zoölogy, | Lawrence. |
| *Whitcroft, Ruby. Music, | Lawrence. |

| | | |
|--------------------------|---------------------------------------|-----------------|
| Whittaker, Arthur Leroy. | Economics, Mathematics, | Nickerson. |
| Wiebe, William. | History, English, | Newton. |
| Wilbur, Clifford H. | Entomology, | Lawrence. |
| Wilkerson, Mann Ethel. | Home Economics, | Lawrence. |
| *Williams, Daisy Lucile. | History, English, | Osage City. |
| Wilson, Agnes Helen. | Home Economics, Education, | Lawrence. |
| *Windett, Florence L. | Botany, Sociology, | Quenemo. |
| *Wingfield, Laura. | Home Economics, Education, | Junction City. |
| *Wingfield, M. Beulah. | Home Economics, Education, | Junction City. |
| Winsor, Lonzo A. | German, Education, English, | Washington. |
| Witte, Lucile. | Zoölogy, | Cushing, Okla. |
| Wolf, Frank Ezra. | Economics, History, | Baldwin. |
| *Woodruff, Sybil. | Chemistry, | Lawrence. |
| Woolsey, Carrie L. | Botany, Zoölogy, | Lawrence. |
| *Woolsey, Darlene. | Entomology, | Lawrence. |
| *Wright, Estella. | English, | Lebanon. |
| Wright, Roy C. | Botany, | Lebanon. |
| *Wyatt, Wiley J. | French, Economics, | Lawrence. |
| Wycoff, Glen L. | Education, | Conway Springs. |
| *Wyland, Emma Frances. | Entomology, | Harlan. |
| *Young, E. Clark. | Chemistry, | Sterling. |
| Young, Nellie M. | Mathematics, Education, | Seneca. |

OTHER INSTITUTIONS

FROM WHICH CANDIDATES FOR DEGREES WERE ADMITTED WITH ADVANCED
STANDING, 1915-'16.

| <i>Institutions.</i> | <i>Candidates.</i> | <i>Institutions.</i> | <i>Candidates.</i> |
|---|--------------------|--|--------------------|
| Baker University..... | 9 | Northwestern State Normal..... | 5 |
| Bethany College..... | 2 | Northwestern University..... | 1 |
| Bethel College..... | 2 | Occidental College..... | 1 |
| Biddle University..... | 1 | Ohio Wesleyan..... | 2 |
| Butler College..... | 3 | Oklahoma Agricultural and Mechanical | |
| Campbell College..... | 2 | College..... | 1 |
| Central State Normal, Oklahoma..... | 3 | Ottawa University..... | 1 |
| Chillicothe Normal..... | 1 | Phillips University..... | 3 |
| College of the City of New York..... | 1 | Rockford College..... | 1 |
| Colorado Agricultural College..... | 1 | St. Benedict's College..... | 1 |
| Colorado School of Mines..... | 1 | St. John's College..... | 1 |
| Columbia University..... | 1 | St. Joseph, Jr., College..... | 1 |
| Cooper College..... | 4 | Southwestern College..... | 9 |
| Defiance College..... | 1 | Tahlequah State Normal..... | 1 |
| Denver University..... | 2 | Tarkio College..... | 1 |
| Drake University..... | 1 | Texas Christian University..... | 1 |
| Drury College..... | 1 | Tufts College..... | 1 |
| East Central State Normal, Oklahoma.... | 1 | University of California..... | 3 |
| Emporia College..... | 1 | University of Chicago..... | 1 |
| Fairmount College..... | 9 | University of Colorado..... | 3 |
| Fort Hays Normal..... | 2 | University of Illinois..... | 1 |
| Friends University..... | 5 | University of Iowa..... | 1 |
| Geneva College..... | 1 | University of Michigan..... | 2 |
| Graceland College..... | 1 | University of Minnesota..... | 1 |
| Highland Park College..... | 3 | University of Missouri..... | 1 |
| Illinois State Normal..... | 1 | University of Nebraska..... | 1 |
| Illinois Woman's College..... | 1 | University of New Mexico..... | 1 |
| Iowa State Teachers' College..... | 1 | University of North Carolina..... | 1 |
| Iowa State College..... | 1 | University of Oklahoma..... | 3 |
| Kansas City Polytechnic Institute..... | 2 | University of Southern California..... | 1 |
| Kansas City University..... | 1 | University of Paris..... | 1 |
| Kansas State Agricultural College..... | 15 | University of Pittsburg..... | 1 |
| Kansas State Manual Training Normal.... | 7 | University of Utah..... | 1 |
| Kansas State Normal..... | 27 | University of Washington..... | 2 |
| Kansas Wesleyan..... | 3 | University of Wisconsin..... | 2 |
| Leland Stanford..... | 2 | Vanderbilt University..... | 1 |
| Liberty College..... | 1 | Ward-Belmont School..... | 1 |
| Lindenwood College..... | 1 | Warrensburg State Normal..... | 6 |
| Marysville Normal..... | 1 | Washburn College..... | 17 |
| Mather College..... | 1 | Washington University..... | 1 |
| Midland College..... | 2 | West Virginia University..... | 1 |
| McPherson College..... | 6 | Wooster University..... | 1 |
| Nebraska Wesleyan..... | 1 | | |
| Nickerson College..... | 1 | <i>Institutions.....</i> | <i>85</i> |
| | | <i>Candidates.....</i> | <i>220</i> |

NOTE.—Candidates for degrees, included in above tabulation, who offered credentials from two schools, 12.

ENROLLMENT, 1915-'16.

| SCHOOLS. | MEN. | WOMEN. | TOTAL. |
|---|-------|--------|--------|
| The Graduate School | 93 | 58 | 151 |
| The College of Liberal Arts and Sciences | 959 | 754 | 1,713 |
| Senior Class | 116 | 136 | 252 |
| Junior Class | 145 | 132 | 277 |
| Sophomore Class | 224 | 188 | 412 |
| Freshman Class | 364 | 247 | 611 |
| Specials | 110 | 51 | 161 |
| The School of Engineering | 423 | ..... | 423 |
| Senior Class | 56 | ..... | 56 |
| Junior Class | 88 | ..... | 88 |
| Sophomore Class | 115 | ..... | 115 |
| Freshman Class | 146 | ..... | 146 |
| Specials | 18 | ..... | 18 |
| The School of Fine Arts | 27 | 157 | 184 |
| Senior Class | 1 | 8 | 9 |
| Junior Class ..... | ..... | 18 | 18 |
| Sophomore Class | 1 | 21 | 22 |
| Freshman Class | 2 | 43 | 45 |
| Specials | 23 | 67 | 90 |
| The School of Law | 171 | ..... | 171 |
| Senior Class | 51 | ..... | 51 |
| Middle Class | 47 | ..... | 47 |
| Junior Class | 46 | ..... | 46 |
| Specials | 27 | ..... | 27 |
| The School of Pharmacy | 56 | 4 | 60 |
| Senior Class | 22 | 2 | 24 |
| Junior Class | 20 | 2 | 22 |
| Sophomore Class | 8 | ..... | 8 |
| Freshman Class | 2 | ..... | 2 |
| Specials | 4 | ..... | 4 |
| The School of Medicine | 100 | 36 | 136 |
| Senior Class | 11 | 1 | 12 |
| Junior Class | 20 | ..... | 20 |
| Sophomore Class | 24 | 1 | 25 |
| Freshman Class | 44 | 4 | 48 |
| Specials | 1 | ..... | 1 |
| Nurses ..... | ..... | 30 | 30 |
| The School of Education | 66 | 256 | 322 |
| Graduates | 12 | 17 | 29 |
| Seniors | 32 | 105 | 137 |
| Juniors | 18 | 95 | 113 |
| Specials | 4 | 39 | 43 |
| Total enrollment, regular session | 1,894 | 1,265 | 3,159 |
| Names counted twice | 225 | 301 | 526 |
| | 1,669 | 964 | 2,633 |
| The Summer Session | 282 | 287 | 569 |
| Summer students in current session | 138 | 105 | 243 |
| | 144 | 182 | 326 |
| Total registration, 1915-'16 | 1,813 | 1,146 | 2,959 |

CLASSIFICATION OF STUDENTS.

BY KANSAS COUNTIES.

| | | | | | |
|-----------------|-----|------------------|----|-------------------|-------|
| Allen..... | 34 | Greenwood..... | 16 | Pawnee..... | 11 |
| Anderson..... | 23 | Hamilton..... | 2 | Phillips..... | 7 |
| Atchison..... | 26 | Harper..... | 15 | Pottawatomie..... | 11 |
| Barber..... | 11 | Harvey..... | 31 | Pratt..... | 20 |
| Barton..... | 15 | Haskell..... | 1 | Rawlins..... | 4 |
| Bourbon..... | 29 | Jackson..... | 17 | Reno..... | 56 |
| Brown..... | 24 | Jefferson..... | 25 | Republic..... | 7 |
| Butler..... | 22 | Jewell..... | 28 | Rice..... | 22 |
| Chase..... | 10 | Johnson..... | 41 | Riley..... | 7 |
| Chautauqua..... | 10 | Kearny..... | 6 | Rooks..... | 4 |
| Cherokee..... | 25 | Kingman..... | 17 | Rush..... | 3 |
| Cheyenne..... | 1 | Kiowa..... | 3 | Russell..... | 12 |
| Clark..... | 8 | Labette..... | 29 | Saline..... | 15 |
| Clay..... | 26 | Lane..... | 4 | Scott..... | 2 |
| Cloud..... | 21 | Leavenworth..... | 58 | Sedgwick..... | 63 |
| Coffey..... | 12 | Lincoln..... | 7 | Seward..... | 6 |
| Comanche..... | 5 | Linn..... | 25 | Shawnee..... | 77 |
| Cowley..... | 40 | Logan..... | 3 | Sheridan..... | 2 |
| Crawford..... | 30 | Lyon..... | 16 | Smith..... | 16 |
| Decatur..... | 7 | Marion..... | 37 | Stafford..... | 15 |
| Dickinson..... | 38 | Marshall..... | 31 | Stevens..... | 1 |
| Doniphan..... | 19 | Meade..... | 10 | Sumner..... | 31 |
| Douglas* | 853 | Miami..... | 20 | Thomas..... | 3 |
| Edwards..... | 14 | Mitchell..... | 20 | Trego..... | 12 |
| Elk..... | 3 | Montgomery..... | 54 | Wabaunsee..... | 20 |
| Ellis..... | 5 | Morris..... | 4 | Wallace..... | 2 |
| Ellsworth..... | 11 | McPherson..... | 41 | Washington..... | 28 |
| Finney..... | 6 | Nemaha..... | 18 | Wichita..... | 1 |
| Ford..... | 19 | Neosho..... | 34 | Wilson..... | 28 |
| Franklin..... | 19 | Ness..... | 8 | Woodson..... | 4 |
| Geary..... | 15 | Norton..... | 19 | Wyandotte..... | 143 |
| Gove..... | 3 | Osage..... | 33 | | |
| Graham..... | 2 | Osborne..... | 23 | Counties, 99..... | 2,739 |
| Gray..... | 2 | Ottawa..... | 23 | | |

BY STATES.

| | | | | | |
|------------------|-------|-------------------|-----|-------------------|-------|
| Arkansas..... | 8 | Missouri..... | 124 | South Dakota..... | 2 |
| Arizona..... | 1 | Nebraska..... | 5 | Tennessee..... | 1 |
| Colorado..... | 2 | New Jersey..... | 1 | Texas..... | 4 |
| Connecticut..... | 1 | New Mexico..... | 6 | Utah..... | 2 |
| Illinois..... | 2 | New York..... | 2 | Honduras..... | 1 |
| Iowa..... | 9 | Ohio..... | 2 | | |
| Kansas..... | 2,739 | Oklahoma..... | 43 | Total..... | 220 |
| Louisiana..... | 1 | Oregon..... | 1 | Grand total..... | 2,959 |
| Mississippi..... | 1 | Pennsylvania..... | 1 | | |

* A large number of students whose names appear in the catalog as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

Table of Graduates, University of Kansas, 1873-1915.

| | Graduate School. | | College. | | Engi- neer- ing. | | Law. | | Pharmacy. | | Fine Arts. | | Medicine. | | Education. | | Normal depart- ment. | | Total degrees granted. | | Duplicate degrees. | |
|-----------|------------------|-----|----------|-------|------------------------|-------|------|-----|-----------|----|------------|-----|-----------|----|------------|----|-------------------------|-----|------------------------------|----|-----------------------|----|
| | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. |
| 1873 | | | | | | | | | | | | | | | | | | | | | | |
| '74 | | | 2 | 1 | 1 | | | | | | | | | | | | | | 4 | | 2 | |
| '75 | | | 2 | 2 | 1 | | | | | | | | | | | | | | 3 | | 1 | |
| '76 | 1 | 1 | 2 | 4 | 1 | | | | | | | | | | | | | | 7 | | 4 | |
| '77 | | | 6 | 2 | 1 | | | | | | | | | | | | | | 10 | | 5 | |
| '78 | 2 | 1 | 6 | 3 | 1 | | | | | | | | | | | | | | 23 | | 5 | 1 |
| '79 | 1 | | 8 | 3 | | | | | | | | | | | | | | | 6 | | | |
| 1880 | 2 | 1 | 5 | 5 | 1 | | 8 | | | | | | | | | | | | 18 | | 5 | |
| '81 | 2 | 1 | 6 | 5 | 1 | | 4 | | | | | | | | | | | | 31 | | 6 | |
| '82 | 1 | | 17 | 3 | 1 | | 5 | | | | | | | | | | | | 34 | | 11 | |
| '83 | 3 | 1 | 12 | 7 | | | 4 | | | | | | | | | | | | 21 | | 3 | |
| '84 | 2 | 3 | 11 | 14 | 1 | | 8 | | | | | | | | | | | | 41 | | 12 | |
| '85 | 1 | 1 | 12 | 15 | 1 | | 7 | | | | | | | | | | | | 53 | | 11 | |
| '86 | 2 | | 15 | 11 | 3 | | 10 | | | | | | | | | | | | 41 | | 6 | |
| '87 | 2 | | 18 | 7 | 1 | | 12 | | | | | | | | | | | | 39 | | 4 | |
| '88 | 3 | 2 | 13 | 4 | 5 | | 11 | | | | | | | | | | | | 21 | | 11 | |
| '89 | 3 | 3 | 10 | 7 | 2 | | 16 | | | | | | | | | | | | 57 | | 3 | |
| 1890 | 3 | 2 | 21 | 8 | 9 | | 25 | | | | | | | | | | | | 64 | | 3 | |
| '91 | 3 | 1 | 14 | 7 | 1 | | 21 | | | | | | | | | | | | 54 | | | |
| '92 | 6 | 3 | 17 | 5 | 4 | | 29 | | | | | | | | | | | | 64 | | 3 | |
| '93 | 10 | 2 | 29 | 12 | 6 | | 42 | | | | | | | | | | | | 93 | | 6 | |
| '94 | 6 | 3 | 31 | 22 | 14 | | 32 | | | | | | | | | | | | 119 | | 4 | |
| '95 | 6 | | 33 | 22 | | | 47 | | | | | | | | | | | | 132 | | 8 | |
| '96 | 8 | | 39 | 31 | 8 | | 54 | | | | | | | | | | | | 136 | | 5 | |
| '97 | 8 | 7 | 34 | 31 | 8 | | 54 | | | | | | | | | | | | 128 | | 13 | |
| '98 | 9 | 4 | 43 | 27 | 18 | | 68 | | | | | | | | | | | | 197 | | 12 | |
| '99 | 9 | 1 | 49 | 28 | 5 | | 59 | | | | | | | | | | | | 173 | | 12 | |
| 1900 | 10 | 3 | 51 | 38 | 15 | | 80 | | | | | | | | | | | | 226 | | 19 | |
| '01 | 6 | 9 | 53 | 65 | 13 | | 9 | | | | | | | | | | | | 182 | | 17 | |
| '02 | 9 | 7 | 54 | 44 | 21 | | 44 | | | | | | | | | | | | 208 | | 8 | |
| '03 | 13 | 8 | 46 | 52 | 21 | | 43 | | | | | | | | | | | | 208 | | 18 | |
| '04 | 10 | 4 | 48 | 55 | 18 | | 36 | | | | | | | | | | | | 187 | | 7 | |
| '05 | 12 | 7 | 36 | 69 | 19 | | 30 | | | | | | | | | | | | 188 | | 6 | |
| '06 | 10 | 5 | 47 | 69 | 26 | | 36 | | | | | | | | | | | | 272 | | 4 | |
| '07 | 15 | 12 | 51 | 60 | 26 | | 39 | | | | | | | | | | | | 251 | | 13 | |
| '08 | 18 | 6 | 50 | 55 | 64 | | 44 | | | | | | | | | | | | 188 | | 6 | |
| '09 | 17 | 6 | 59 | 84 | 41 | | 47 | | | | | | | | | | | | 187 | | 7 | |
| 1910 | 21 | 8 | 71 | 99 | 49 | | 50 | | | | | | | | | | | | 278 | | 19 | |
| '11 | 35 | 11 | 80 | 90 | 54 | | 48 | | | | | | | | | | | | 283 | | 18 | |
| '12 | 30 | 17 | 93 | 103 | 51 | | 56 | | | | | | | | | | | | 349 | | 15 | |
| '13 | 37 | 18 | 87 | 108 | 58 | | 66 | | | | | | | | | | | | 367 | | 37 | |
| '14 | 36 | 37 | 102 | 101 | 54 | | 63 | | | | | | | | | | | | 406 | | 28 | |
| '15 | 40 | 29 | 102 | 112 | 56 | | 36 | | | | | | | | | | | | 449 | | 32 | |
| Totals... | 407 | 224 | 1,458 | 1,467 | 686 | 1,205 | 18 | 414 | 36 | 11 | 218 | 186 | 9 | 12 | 32 | 56 | 6,453 | 455 | 277 | | | |

SUMMARY.

| | |
|--|-------|
| Total number of degrees granted | 6,453 |
| Degrees granted to men..... | 4,413 |
| Duplicate degrees..... | 455 |
| Number of men receiving degrees..... | 3,958 |
| Degrees granted to women..... | 2,040 |
| Duplicate degrees..... | 277 |
| Number of women receiving degrees..... | 1,763 |
| <hr/> | |
| Total number of persons graduated..... | 5,721 |
| <hr/> | |
| Number of men deceased..... | 238 |
| Number of women deceased..... | 96 |
| <hr/> | |
| Total number deceased..... | 334 |
| <hr/> | |
| Number of men graduates living..... | 3,720 |
| Number of women graduates living..... | 1,667 |
| <hr/> | |
| Total number of graduates living..... | 5,387 |
| Number of honorary degrees not included above..... | 9 |

DISTRIBUTION OF ALUMNI.

| | | | | | |
|---------------------------|-------|---------------------|-----|-------------------------|-------|
| Alabama..... | 5 | Nebraska..... | 59 | Alaska..... | 4 |
| Arizona..... | 21 | Nevada..... | 4 | Bulgaria..... | 1 |
| Arkansas..... | 27 | New Hampshire..... | 3 | Burma..... | 1 |
| California..... | 138 | New Jersey..... | 21 | Central America..... | 3 |
| Colorado..... | 113 | New Mexico..... | 27 | Canada..... | 11 |
| Connecticut..... | 13 | New York..... | 107 | China..... | 8 |
| Delaware..... | 2 | North Carolina..... | 3 | Cuba..... | 4 |
| District of Columbia..... | 36 | North Dakota..... | 11 | England..... | 4 |
| Florida..... | 25 | Ohio..... | 30 | France..... | 1 |
| Georgia..... | 2 | Oklahoma..... | 126 | Germany..... | 2 |
| Idaho..... | 37 | Oregon..... | 35 | Hawaii..... | 1 |
| Illinois..... | 82 | Pennsylvania..... | 34 | India..... | 3 |
| Indiana..... | 23 | Rhode Island..... | 5 | Italy..... | 2 |
| Iowa..... | 34 | South Carolina..... | 1 | Japan..... | 7 |
| Kansas..... | 3,224 | South Dakota..... | 7 | Korea..... | 3 |
| Kentucky..... | 6 | Tennessee..... | 6 | Mexico..... | 6 |
| Louisiana..... | 12 | Texas..... | 46 | Philippine Islands..... | 29 |
| Maine..... | 0 | Utah..... | 26 | Scotland..... | 1 |
| Maryland..... | 7 | Vermont..... | 1 | South America..... | 10 |
| Massachusetts..... | 48 | Virginia..... | 9 | Tasmania..... | 1 |
| Michigan..... | 19 | Washington..... | 88 | Turkey..... | 1 |
| Minnesota..... | 24 | West Virginia..... | 4 | Address unknown..... | 142 |
| Mississippi..... | 4 | Wisconsin..... | 26 | <hr/> | |
| Missouri..... | 487 | Wyoming..... | 17 | Total..... | 5,387 |
| Montana..... | 41 | Africa..... | 1 | <hr/> | |

OCCUPATIONS OF ALUMNI.

WOMEN.

| | |
|---|-------|
| Educational work: | |
| Teaching in universities or colleges..... | 51 |
| Teaching in secondary schools..... | 457 |
| Teaching music..... | 61 |
| Farming..... | 7 |
| Home makers, married..... | 440 |
| Library work..... | 17 |
| Medicine..... | 15 |
| Office work..... | 21 |
| Pharmacy..... | 10 |
| Religious work..... | 16 |
| Social service work..... | 11 |
| Study..... | 20 |
| Home makers, unmarried..... | 351 |
| Writing or editing..... | 9 |
| Miscellaneous occupations..... | 82 |
| Occupations unknown..... | 99 |
| Total..... | 1,667 |

MEN.

| | |
|---|-------|
| Advertising business..... | 9 |
| Banking and investments..... | 61 |
| Chemists..... | 29 |
| Educational work: | |
| Teachers or administrators in universities or colleges..... | 195 |
| Superintendents, principals of schools..... | 86 |
| Teachers in secondary schools..... | 113 |
| Teaching music..... | 10 |
| Engineering..... | 511 |
| Farming..... | 83 |
| Government service..... | 36 |
| Insurance business..... | 28 |
| Law..... | 820 |
| Manufacturing..... | 10 |
| Medicine..... | 321 |
| Mercantile business..... | 143 |
| Office holding—county, state, judicial..... | 42 |
| Pharmacy..... | 305 |
| Railway business..... | 22 |
| Real estate business..... | 28 |
| Religious work..... | 47 |
| Study..... | 69 |
| Writing or editing..... | 57 |
| Miscellaneous occupations..... | 270 |
| Occupations unknown..... | 425 |
| Total..... | 3,720 |



GENERAL INDEX.

SECTION 1—GENERAL INFORMATION.

| | PAGE | | PAGE |
|---|------|---------------------------------|------|
| Administration, Officers of | 6 | Instructors | 21 |
| Administration, State Board of..... | 3 | Assistant Instructors | 25 |
| Admission, Requirements of..... | 45 | Organizations, University | 39 |
| Advanced Standing, Admission to..... | 46 | General | 39 |
| Bible Chair of Christian Church..... | 40 | Religious | 39 |
| Buildings | 36 | Literary | 41 |
| Calendar, University | 4 | Scientific | 42 |
| Campus, The | 36 | Debating | 44 |
| Christian Associations | 39 | Dramatic | 44 |
| Chronological Table | 5 | Musical | 44 |
| Churches, Relation of University to.... | 41 | Prizes | 49 |
| Deans of Schools, List of..... | 6 | Publications | 32 |
| Divisions of University..... | 30 | Religious Organizations | 39 |
| Summer Session | 30 | Rooming Houses | 51 |
| Extension | 31 | Scholarships | 50 |
| Athletics | 31 | Schools of University..... | 27 |
| Libraries | 31 | Graduate | 27 |
| Museums | 32 | The College | 28 |
| Publications | 32 | Engineering | 28 |
| State Service Work..... | 33 | Fine Arts | 29 |
| Surveys | 33 | Law | 29 |
| Examinations, Entrance | 45 | Pharmacy | 29 |
| Expenses | 47 | Medicine | 30 |
| Extension Work | 31 | Education | 30 |
| Fees | 47 | Special Students | 46 |
| Health, Student | 52 | Student Health | 52 |
| Information, General | 45 | University, The | 27 |
| Instruction, Officers of..... | 9 | Schools of | 27 |
| Libraries | 31 | Divisions of | 30 |
| Museums | 32 | History of | 34 |
| Officers of Administration..... | 6 | Government of | 35 |
| Officers of Instruction..... | 9 | Equipment of | 36 |
| Professors | 9 | University Calendar | 4 |
| Associate Professors | 15 | University Organizations | 39 |
| Assistant Professors | 18 | Westminster Association | 40 |

SECTION 2—GRADUATE SCHOOL.

| | | | |
|----------------------------------|----|-------------------------|----|
| Administration | 8 | Geology | 29 |
| Admission, requirements for..... | 11 | German | 30 |
| Calendar, University | 3 | Greek | 32 |
| Courses, Description of— | | History | 33 |
| Anatomy | 15 | Home Economics | 34 |
| Bacteriology | 16 | Journalism | 34 |
| Botany | 17 | Latin | 35 |
| Chemistry | 18 | Law | 36 |
| Economics | 20 | Mathematics | 36 |
| Education | 21 | Pharmacy | 38 |
| Engineering | 23 | Philosophy | 38 |
| English | 25 | Physics | 39 |
| Entomology | 27 | Physiology | 41 |
| Fine Arts | 28 | Romance Languages | 42 |

SECTION 2—GRADUATE SCHOOL—*continued*.

| | PAGE | | PAGE |
|-----------------------|------|--------------------------------|------|
| Sociology | 44 | Faculty, Graduate School..... | 5 |
| Zoölogy | 45 | Fellows, University | 9 |
| Degrees Granted | 11 | Fellows, Kansas Colleges | 9 |
| Departments | 14 | Fellowships, University | 13 |
| Equipment | 14 | Registration in | 11 |

SECTION 3—THE COLLEGE.

| | | | |
|----------------------------------|----|--------------------------|----|
| Administration | 8 | History | 37 |
| Admission, requirements for..... | 9 | Home Economics | 40 |
| Advanced Standing | 9 | Journalism | 43 |
| Calendar, University | 3 | Latin | 45 |
| Courses, Description of..... | 15 | Law | 47 |
| Anatomy | 15 | Mathematics | 47 |
| Astronomy | 57 | Medicine | 50 |
| Bacteriology | 15 | Mineralogy | 32 |
| Botany | 16 | Music | 50 |
| Chemistry | 18 | Pharmacy | 51 |
| Design | 20 | Philosophy | 51 |
| Economics | 21 | Physical Education | 54 |
| Education | 26 | Physics | 57 |
| Engineering | 26 | Physiology | 60 |
| English | 27 | Psychology | 51 |
| Entomology | 30 | Public Speaking | 60 |
| Geology | 32 | Romance Languages | 62 |
| German | 33 | Sociology | 65 |
| Greek | 35 | Zoölogy | 67 |

SECTION 4—SCHOOL OF ENGINEERING.

| | | | |
|----------------------------------|----|---|----|
| Administration | 6 | Courses, Five Year..... | 7 |
| Admission | 9 | Curriculum, Leading to Degree B.S.... | 23 |
| Advanced Standing | 10 | Curriculum, leading to Degree of B.S. in Engineering | 14 |
| Architectural Engineering | 8 | Degrees Granted | 9 |
| Buildings | 32 | Drawing Rooms | 32 |
| Calendar | 3 | Electrical Engineering | 8 |
| Chemical Engineering | 8 | Engineering and Administrative Science, | 8 |
| Civil Engineering | 7 | Engineering Experiment Station..... | 52 |
| Courses, Description of..... | 34 | Station Staff | 52 |
| Architectural Engineering | 34 | Enrollment | 11 |
| Bacteriology | 35 | Entrance Examinations | 10 |
| Chemistry | 35 | Equipment | 32 |
| Civil Engineering | 37 | Extension Work | 12 |
| Economics | 39 | Faculty | 5 |
| Electrical Engineering | 39 | Fees and Expenses..... | 11 |
| Engineering | 41 | Foreign Languages, required for graduation | 10 |
| Engineering Drawing | 41 | Inadequate Preparation | 10 |
| English | 42 | Inspection Trips | 52 |
| Geology | 42 | Laboratories | 32 |
| German | 43 | Libraries | 32 |
| Machine Construction | 43 | Mechanical Engineering | 8 |
| Mathematics | 44 | Mining Engineering | 8 |
| Mechanical Engineering | 45 | Organization and Purpose..... | 7 |
| Mechanics | 47 | Registration | 11 |
| Metallurgy | 48 | Societies, Technical | 12 |
| Mineralogy | 48 | Departmental Student | 13 |
| Mining Engineering | 48 | Special Students | 10 |
| Physical Education | 50 | Summer Work | 52 |
| Physics | 50 | | |
| Romance Languages | 51 | | |
| Technical Reports and Theses.... | 51 | | |

SECTION 5—SCHOOL OF FINE ARTS.

| | PAGE | | PAGE |
|---|------|---------------------------------|------|
| Admission | 6 | Curriculum | 12 |
| Band, University | 9 | Drawing and Painting..... | 18 |
| Calendar | 3 | Organ | 14 |
| Choral Union | 9 | Pianoforte | 12 |
| Compositions, List of..... | 31 | Violin | 16 |
| Concerts | 8 | Violoncello | 16 |
| Courses | 5 | Vocal Culture | 16 |
| Courses, description of..... | 22 | Degrees | 5 |
| Drawing and Painting..... | 22 | Departments | 5 |
| English | 23 | Dictation | 10 |
| French | 24 | Ear Training | 10 |
| German | 25 | Enrollment | 8 |
| Greek | 25 | Ensemble | 9 |
| Italian | 25 | Exhibitions, Art | 9 |
| Musical Theory | 25 | Expenses | 10 |
| Organ | 26 | Rates for regular students..... | 10 |
| Pianoforte | 27 | Rates for special students..... | 11 |
| Physical Education | 27 | General | 8 |
| Physics | 28 | Faculty | 4-5 |
| Public School Music..... | 28 | Glee Club | 9 |
| Violin | 29 | Music History | 9 |
| Vocal Culture | 30 | Recitals | 8 |
| Course, Four-year Artist's Certificate.. | 7 | Registration | 8 |
| Course, Three-year Teacher's Certificate, | 7 | Special Students | 8 |
| Course, Two-year Teacher's Certificate, | 7 | | |

SECTION 6—SCHOOL OF LAW.

| | | | |
|---------------------------------|----|--------------------------------------|----|
| Admission | 5 | Curriculum, Schedule of Courses..... | 10 |
| Admission to the Bar..... | 5 | Degree Granted | 5 |
| Attendance, Certificate of..... | 5 | Enrollment | 6 |
| Calendar | 2 | Equipment | 7 |
| College and School of Law in— | | Examinations | 5 |
| Six Years | 8 | Faculty | 4 |
| Courses, Description of..... | 11 | Fees | 6 |
| First-year Course | 11 | Instruction, System of..... | 8 |
| Second-year Course | 12 | Purpose of School..... | 5 |
| Third-year Course | 13 | Registration | 6 |
| Course for Mining Engineering | | Student Honors and Activities..... | 7 |
| Students | 14 | Summer Session, Courses of Law..... | 8 |
| Courts, Practice | 9 | Teaching, Method of..... | 8 |

SECTION 7—SCHOOL OF PHARMACY.

| | | | |
|--------------------------------|----|--|----|
| Admission | 5 | Pharmaceutical Chemistry | 17 |
| Analysis, Food and Drug..... | 18 | Physics and Astronomy..... | 17 |
| Calendar | 2 | Physiology and Pharmacology.... | 18 |
| Courses, Correspondence | 18 | Curriculum | 8 |
| Courses, Description of | 10 | Four-year Schedule | 9 |
| Anatomy | 10 | Two- and Three-year Schedule.... | 8 |
| Bacteriology | 10 | Degrees | 5 |
| Biochemistry | 11 | Enrollment | 6 |
| Botany and Pharmacognosy..... | 11 | Equipment | 6 |
| Chemistry | 12 | Faculty | 4 |
| English | 13 | Fees | 6 |
| French | 14 | Organization | 5 |
| Geology | 14 | Positions for Graduates..... | 6 |
| German | 14 | Purpose | 5 |
| Mathematics | 15 | Registration | 5 |
| Pharmacy and Materia Medica... | 15 | Registration, State Board of Pharmacy, | 6 |

SECTION 8—SCHOOL OF MEDICINE.

| | PAGE | | PAGE |
|-----------------------------------|------|-----------------------------------|------|
| Administration | 5 | Degrees | 7 |
| Admission, Requirements for | 8 | Enrollment | 9 |
| Advanced Standing | 9 | Equipment | 11 |
| Calendar | 2 | Faculty | 4 |
| Courses, Description of | 13 | Fees | 10 |
| Anatomy | 13 | History | 7 |
| Bacteriology | 14 | Nurses, Training School for | 24 |
| Pathology and Bacteriology | 14 | Admission | 24 |
| Zoölogy | 15 | Course of Study | 24 |
| Organic Chemistry | 15 | Equipment | 24 |
| Biochemistry | 15 | Expenses | 25 |
| Pharmacology, Therapeutics and | | Faculty | 24 |
| Toxicology | 16 | Graduation | 25 |
| Physiology and Pharmacology | 16 | Hours of Instruction | 25 |
| Medicine | 17 | Promotion | 25 |
| Preventive Medicine | 19 | Optional Work | 9 |
| Surgery | 20 | Organization | 7 |
| Obstetrics and Gynecology | 22 | Registration | 9 |
| Curriculum | 12 | | |

SECTION 9—SCHOOL OF EDUCATION.

| | | | |
|------------------------------------|----|--|---|
| Administration | 4 | Degree in Education | 5 |
| Admission | 6 | Diploma, University Teacher's | 5 |
| Calendar | 2 | Diploma, Special | 6 |
| Certificate, State Teacher's | 5 | Educational Service, Bureau of | 6 |
| Courses, Arrangement of | 8 | Enrollment | 6 |
| Courses, description of | 9 | Equipment | 7 |
| Sophomore | 9 | Faculty | 4 |
| Junior, Senior and Graduate | 9 | Graduate Policy of School of Education | 8 |
| Education, History of | 9 | Oread Training School | 7 |
| Educational Administration | 11 | Purpose | 5 |
| Educational Theory | 10 | Registration | 6 |
| Special Methods | 12 | Schoolmen's Conference at University | 7 |
| Senior Teaching | 12 | Teachers, Recommendation of | 7 |

SECTION 10—SUMMER SESSION.

| | | | |
|--|----|-------------------------------------|----|
| Admission | 13 | List of Courses— | |
| Amount of Credit | 14 | University Teachers' Diploma | 15 |
| Calendar | 2 | Anatomy | 17 |
| Climatic Conditions | 11 | Astronomy | 18 |
| Correspondence Study | 12 | Bacteriology | 18 |
| Credit toward Degrees | 14 | Botany | 18 |
| Description of Courses | 17 | Chemistry | 19 |
| Equipment | 9 | Design and Drawing | 21 |
| Faculty | 3 | Economics | 21 |
| Fees and Expenses | 16 | Education | 22 |
| General Information | 11 | Engineering | 24 |
| Graduate Work | 15 | English | 26 |
| Lectures and Entertainments | 11 | Entomology | 27 |
| Nature of Courses | 14 | Geology | 29 |
| Other State Teachers' Certificates | 15 | German | 29 |
| Purposes of the Summer Session | 8 | History and Political Science | 30 |
| Recommendation of Teachers | 12 | Home Economics | 31 |
| Recreation | 11 | Journalism | 32 |
| Registration | 14 | Latin | 33 |
| Summer Session Kansan | 12 | Law | 33 |
| Time of Beginning Work | 13 | Mathematics | 34 |

SECTION 10—SUMMER SESSION—*continued*.

| | PAGE | | PAGE |
|--------------------------------|------|-------------------------|------|
| Music | 35 | Public Speaking | 40 |
| Philosophy and Psychology..... | 36 | Romance Languages | 41 |
| Physical Education | 37 | Sociology | 43 |
| Physics | 39 | Zoölogy | 44 |
| Physiology | 40 | | |

SECTION 11—CORRESPONDENCE-STUDY COURSES.

| | | | |
|---------------------------------------|----|---------------------------------------|----|
| Administration | 5 | Mineralogy and Geology..... | 43 |
| Bulletin, Information and Welfare.... | 59 | Pharmacy | 44 |
| Clubs, Study | 11 | Philosophy | 47 |
| Courses of Instruction— | | Physical Education | 48 |
| Astronomy | 13 | Physics | 49 |
| Botany | 13 | Physiology | 50 |
| Chemistry | 14 | Public Speaking | 50 |
| Economics | 15 | Romance Languages | 51 |
| Education | 16 | Sociology | 52 |
| Engineering | 18 | Zoölogy | 53 |
| English | 32 | Courses, Special | 54 |
| Entomology | 34 | Credit, University | 10 |
| German | 35 | Faculty | 3 |
| Greek | 36 | Purpose | 7 |
| High School Branches..... | 36 | Registration Form for Correspondence | |
| History | 39 | Study, Regulations..... | 9 |
| Home Economics | 40 | Regulations, Special Engineering..... | 10 |
| Journalism | 41 | Study, Correspondence Classroom.... | 11 |
| Latin | 42 | System | 9 |
| Mathematics | 43 | Work Offered | 8 |

SECTION 12—The Divisions of Athletics, Libraries, Museums, Publications, State Service Work, University Surveys.

| | | | |
|-------------------------------------|----|--|----|
| Athletics | 3 | Collection of Mammals, Birds and | |
| Divisions, University | 3 | Fishes | 9 |
| Engineering Experiment Station..... | 13 | Publications | 10 |
| Bulletins, Engineering | 13 | Recreations, General Provisions for... | 4 |
| Organization and Purpose..... | 13 | Research, State Chemical..... | 12 |
| Gifts, Memorial | 6 | Analysis of Food and Drugs..... | 12 |
| Libraries | 5 | Weights and Measures..... | 12 |
| Libraries in Topeka..... | 6 | State Service Work..... | 11 |
| Library, Lawrence Public..... | 6 | Entomological Field Work..... | 11 |
| Museums | 6 | Water Analysis | 11 |
| Entomology | 7 | Ceramics and Kansas Clays..... | 11 |
| Herbarium | 7 | State Surveys | 14 |
| Classical | 8 | Biological | 14 |
| Vertebrate Paleontology | 9 | Geological | 15 |
| Zoölogical Collections | 9 | Publications of the State Geological | |
| Paleobotany | 9 | Survey | 15 |

SECTION 13—Degrees Conferred and Students in Residence
During Year 1915-'16.

Mineral & Public
Mining Law.
Metal Mining.
Mine Examination
Excavation and E
Mining Methods
Geology of Meta

UNIVERSITY OF ILLINOIS
DEPARTMENT OF GEOLOGY
URBANA, ILLINOIS

| | | |
|--------------------------------------|---|----------|
| Mineralogy 61. | | 5. |
| Economic Geology I Mining. | - | 3 |
| " " II (Mining). | - | 5 |
| Historical Geology I. | | 3 |
| " " II. | | 2 |
| Petrology I. | | 3 |
| Coal Mining I. | | |
| " " II. | | |
| Mine Administration I. | | |
| Geology and Methods I | | |
| Are Deposits I. | | |
| Structural Geology I. | | 3 |
| " " II. | | 3 |
| Dynamic geology | | |
| Geologic methods | | 5 |
| Advanced Stratigraphy | | 3. |
| Invertebrate Paleontology. | | 5 |
| M.A., Thesis and Teaching Fellowship | | |
| Coal Shipping in S. E. Kansas. | 8 | 1917-18. |

Mineral & Public Land Surveying³.

Mining Law. No 52 1 hr.

Metal Mining. No 54. 2 hrs.

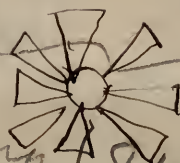
Mine Examination and Reports No 59 1 hr.

Excavation and Explosives No 51 2 hr.

Mining Methods 1 hr.

Geology of Metals, General Principles
of Ore Formation No 104 - 5.

Mining - ~~Advanced~~ ^{Senior} Mining } Stock
Mining Methods



UNIVERSITY OF ILLINOIS-URBANA



3 0112 111993850